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January 9, 2009

U. S. Department of the Army
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Superfund Section
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Attn: CENWK-ED-EB/Todd Daniels

Project: Contract No. W912DQ-08-D-0018
Task Order No. 3, WAD 12
Federal Creosote Superfund Site
Operable Unit 3 – Groundwater

Subject: Final Groundwater Monitoring Report
Long-Term Monitoring Program – Year 3

ALL PAGES SUBSTITUTED PER COMMENTS 1/14/09 R.R.

THE ATTACHED ARE THE PAGES THAT WERE REMOVED FROM THE ORIGINAL - AS WE ONLY DISCUSSED NEW PAGES TO BE DISCARDED.

Dear Todd:

CDM Federal Program Corporation (CDM) is pleased to submit three copies of replacement pages for the final subject report. Replacement pages include:

- Inside cover sheet
- Table of Contents
- Section 1 text, pages 1-4 to 1-8
- Section 2 text, pages 2-3 to 2-8
- Replacement Table 3-5
- New figures: 1-3, 1-4, 1-5
- Replacement figures: 3-4, 3-5, 3-6 (insert into plastic sleeves)
- Replacement Appendix A (Note: replace entire Appendix A. Includes well development logs).

CDM has also provided the response to comments. We have provided five copies to EPA (3 copies for NJDEP) and one copy to USACE New York District.

If there are any questions concerning the submittal, please contact me at (732) 225-7000.

Very truly yours,

Michael Popper
Project Manager
CDM Federal Programs Corporation

Enclosure

cc: R. Puvogel, E PA (2 copies)
M. Talwar, USACE NY
NJDEP via EPA (3 copies)
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Project file

U. S. Army Corps of Engineers
Kansas City District

Federal Creosote Superfund Site
Operable Unit 3

February 2008

Groundwater Monitoring Report
Long-Term Monitoring Program – Year 3

U.S. Department of the Army Corps of Engineers
Kansas City District

Contract No. W912DQ-06-D-0007

Delivery Order No. 8, WAD 11

Groundwater Monitoring Report
Year 3 for Long-Term Monitoring Program
for
Federal Creosote Superfund Site
Operable Unit 3

Manville, New Jersey

February 26, 2008

Prepared for:
U.S. Department of the Army Corps of Engineers
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dissolution of the gypsum cement has occurred within the formation at depths shallower than approximately 200 feet.

In the sites vicinity, the interbedded water-bearing units and aquitards of the Passaic Formation are part of a homoclinal structure with a typical dip in the range of 5° to 25° to the north, although bedding strikes vary slightly within the axis of the nearby Watchung Syncline. The shale has little primary permeability; the original primary porosity having been reduced by compaction and cementation. Virtually all groundwater movement in the Passaic aquifer system occurs through intersecting fracture sets and along partings between bedding planes. The Passaic aquifer is strongly anisotropic, where the axis of maximum hydraulic conductivity generally is parallel to the strike of bedding partings and high-angle fractures (Michalski 1990). The least permeable axis is oriented perpendicular to bedding.

1.2.2 Site Geology

The site is underlain by approximately 25 to 35 feet of unconsolidated sediments of glacio-fluvial origin, which in turn are underlain by the Late Triassic siltstone and shale of the Passaic Formation. The soil boring lithologic descriptions suggest the following sequence (from the ground surface to the bedrock surface) of deposits to be typical at the site: fill, sand and gravel, silt and clay, sand and gravel (with some silt and clay layers and seams), and weathered siltstone and shale (bedrock). The weathered zone of reddish-brown shale retains the two principal fracture sets; however, the weathering processes of the shale results in the reduction of primary fracture permeability by clogging more open fractures with clay (Michaliski 1990). Therefore, the generally smaller, near vertical fracture set may tend to remain more open in the weathered zone compared with bedding partings. This weathered zone is approximately 10 feet thick.

Extensive bedrock fracturing begins several feet below the top of the bedrock surface. Since the elevation of the bedrock surface does not significantly vary, the elevation of the fracturing is relatively consistent throughout the site. The extensive bedrock fracturing begins at an elevation of between five and 10 feet below msl and becomes more prevalent with depth. The dip angles associated with these fractures are not consistent between wells and may range from 5 to 60 degrees at the same elevations. At depths ranging from 80 to 208 feet, gypsum in-filling of fractures begins, reducing permeability to essentially zero.

1.2.3 Site Hydrogeology

A multi-phased investigation of the Site was conducted to evaluate the occurrence, quality, and flow of groundwater in the overburden and bedrock aquifer (CDM 2001). In general, the weathering processes in shales result in the reduction of primary fracture permeability by clogging the more conductive fractures. The lowest hydraulic conductivity values come from shallow wells that are completed in aquitard units within the weathered zone. Although weathering tends to reduce the permeability, fractures formed during the weathering process may augment the storage potential of the weathered zone. As a result, pockets of perched water often form within and above the weathered zone. Strong downward vertical gradients can develop across the weathered zone in recharge areas. If the ground water stored within the weathered zone is contaminated, downward migration of contaminants through wells open across the zone can carry contamination to deeper aquifer zones.

Below the intensely weathered shallow zone, deep monitoring wells exhibit consistently high hydraulic conductivity and bulk permeability. However, significant head differences can exist between individual water-bearing units due to anisotropies within the fractured bedrock. Bedding plane partings generally exhibit transmissivities that average twice that of high-angle fractures but decrease in size and number with increasing depth. The magnitude and frequency of high-angle fractures show no apparent dependence upon depth. Consequently, fluid flow near the surface is controlled primarily by the highly transmissive, subhorizontal bedding plane partings. As depth increases, the high-angle fractures apparently become more dominant hydrologically (Morin et al. 1996). Boreholes that have not yielded water in the first 500 feet of drilling are not likely to penetrate water-yielding zones at deeper levels (Swain et al. 1992).

Groundwater at the site occurs in the overburden and the bedrock units under unconfined and semi-confined conditions. Localized perched groundwater zones are common in the overburden on top of the silt and clay layer that occurs at approximately six to ten feet below the surface at the site. For the purposes of this analysis, the groundwater has been separated into two units, the overburden unit and the bedrock unit. However, site data (e.g., contamination is found in both the overburden and bedrock) indicate that these units are hydrologically connected.

The hydrogeological analysis presented in the RI concluded that groundwater flow in the overburden is predominantly from the Site to the southeast, toward the Millstone River. In the bedrock aquifer, a groundwater divide exists between monitoring well MW116I and the monitoring well MW118 cluster. Groundwater gradients to the northwest of the divide are toward the Raritan River and Manville municipal wells C1 and C2. Groundwater gradients to the southeast of the divide are toward the Millstone River. Vertical groundwater gradients are downward near the divide and upward near the Millstone River.

1.2.4 Site Conceptual Hydrogeologic Model

A recent conceptual model of the Passaic aquifer proposes a "leaky" multi-unit aquifer system (LMAS) (Michalski 1990; Michalski and Klepp 1990; Michalski and Britton 1996). Below the largely impermeable weathered zone, the LMAS consists of thin water-bearing units and much thicker, strata-bound, intervening aquitards. The pervasive high-angle fractures impart a leaky character to the entire sequence. Groundwater flow down-dip along bedding partings is limited to the depth at which bedding partings are either closed due to lithostatic pressure or by the depth at which gypsum cementation has infilled the fissures, thus preventing further down-dip flow. The prevailing groundwater flow direction within individual aquifer units tends to be subparallel to strike of beds (Michalski and Britton 1996). The strongly cyclic nature of the Passaic Formation lithostratigraphy has resulted in multiple repetitions of similar sequences at consistent intervals. Multiple aquifer/aquitard couplets therefore can be anticipated in the aquifer system.

Evidence from the packer testing conducted as part of the RI indicates that flow occurs along both strike and along dip, as well as between areas that do not seem to fall along either strike or dip. The reaction of shallow wells to pumping of deep units is indicative of flow along joints and fractures. The prevalent high-angle fractures in the bedrock are associated with some of the zones of highest conductivity in the packer testing. The infilling of fractures with gypsum

effectively reduces the hydraulic conductivity of the rock to zero (or near zero). Therefore, the groundwater flow at this site is more likely influenced by prevalent vertical joints and fractures in the rock, especially in the area of the Lost Valley. However, partings along bedding planes still provide a pathway for groundwater flow.

Contamination generated from creosote in the subsurface takes two forms: non-aqueous phase liquid (NAPL) phase and dissolved phase. Because creosote has higher density than water, it is also called dense NAPL (DNAPL). Movement of NAPL phase is independent of groundwater flow, instead being determined by gravity and interfacial tensions. The downward movement of NAPL is retarded by fine-grained units. NAPL moves along, around, and through breaks in discontinuous silts and clays. NAPL movement is also impeded by glacial till and weathered bedrock. Once NAPL has reached bedrock, it flows through vertical fractures, where present, into deeper bedrock. The potential downward movement of NAPL in bedrock is bounded by gypsum infilling of fractures, which effectively reduces the NAPL permeability of the bedrock to zero (or near zero). The dissolved phase of contamination moves with the groundwater gradient. As expected, the highest levels of contamination develop down gradient of the source areas and the areas near free product in the bedrock. Movement of dissolved phase can be retarded by sorption to aquifer solids. Retardation affects each compound according to its affinity for organic carbon, bound to aquifer solids.

1.3 Extent of Groundwater Contamination Found in Remedial Investigation

During the RI in 1999 and 2000, creosote-related groundwater contamination was detected both in overburden and in bedrock monitoring wells (MW). The most frequently detected contaminants were polycyclic aromatic hydrocarbons (PAHs), naphthalene, and benzene. High concentrations of contaminants were detected in the vicinity of former Lagoons A and B (Figure 1-2). Groundwater contamination was largely restricted to the vicinity of the former lagoons (CDM 2001). Subsurface transport of PAHs and benzene is retarded by various natural attenuation mechanisms including sorption and biotransformation.

For overburden groundwater contamination, excavation at OU1 and OU2 has removed the source material. Monitoring wells MW-1S, MW-11S, MW-12S, MW-101S, MW-102S, MW-104S, and MW-120S were abandoned during remedial construction. Free phase creosote observed in MW-12S during the RI has been excavated and treated off site. In the vicinity of Lagoon B, free phase creosote was observed in monitoring well MW-7S and high concentrations of PAHs, naphthalene, and benzene were detected in MW-6S.

In bedrock, free phase creosote was observed in several intermediate and deep monitoring wells (MW-2D, MW-2I, MW-5I, and MW-116I). Elevated concentrations of contaminants were also detected in MW-3I and MW-12I; low concentrations of benzene was detected in MW-114D. Low concentrations of naphthalene and PAHs were detected in MW-114I and MW-114D. Monitoring wells MW-2I, MW-2D, MW-3I, and MW-12I were abandoned during remedial construction.

1.4 Extent of Groundwater Contamination Found in 2005 and 2006 Groundwater Sampling

In November 2005 and October 2006, CDM conducted two rounds of groundwater sampling. Samples were collected from 30 monitoring wells in each event. The results are summarized below.

In the overburden aquifer, site-related VOCS, benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in MW-6S and MW-7S, which are in the vicinity of the former Lagoon B. Benzene concentrations in these two wells exceeded the groundwater remediation goal of 1 microgram per liter (µg/L). A trace amount of xylene at 1.3 µg/L was detected in MW-111S, which is located to the west of the former Canal B. Site-related VOCs were not observed elsewhere. Site-related PAHs, naphthalene, 2-methylaphthalene, 1,1'biphenyl, acenaphthylene, acenaphthene, dibenzofuran, fluorine, phenanthrene, anthracene, carbazole, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, were detected in groundwater at MW-6S and MW-7S, where NAPL has been observed. Site-related PAHs were also detected in MW-111S, which indicate that groundwater at this area has been impacted by the creosote contamination. In general, groundwater contamination in the overburden aquifer is limited to the vicinity of the primary creosote source areas. Reported detections of BTEX and PAHs remained the same level in the two wells, MW-6S and MW-7S, between November 1999 and November 2006. PAH concentrations in MW-111S have slightly increased in 2006 compared to results in 1999.

In the bedrock aquifer, benzene was detected in MW-5I at concentrations above the remediation goal of 1 µg/L. Creosote related VOCs and PAHs were also detected in MW-114I, MW-114D, MW-116I, and MW-5I. Naphthalene was detected above its remediation goal of 300 µg/L in two wells: MW-5I (in both 2005 and 2006 samples) and MW-114I (in 2005 sample). MW-5I is in the vicinity of the former Lagoon B, NAPL was observed in this well. MW-114I is downgradient from Lagoon B, contaminant concentrations were low in this well. Creosote related contaminant concentrations in MW-116I were generally low, even though during the RI, NAPL was observed in MW116I. MW-116I is located north of the former Lagoon A. None of the remaining off-site wells had detections of naphthalene and creosote related compounds, which suggests that the contaminant distribution is limited to the vicinity of creosote source areas.

1.5 Purpose and Organization of the Report

This report is the third annual report for the long term groundwater monitoring program. It documents the installation of new monitoring wells and provides the results of the third round of groundwater sampling. The extent of groundwater contamination and the possibility of biological degradation of creosote are discussed. The report is organized into four sections:

- Section 1 – Introduction
- Section 2 – Field Activities
- Section 3 – Field Activity Results
- Section 4 - References

- Three-arm caliper measurements record the average diameter of the borehole at a given depth. This tool can identify fractures and solution openings that may facilitate water flow.
- Natural gamma logs provide a record of total natural gamma radiation by depth. The amplitude of the gamma response is affected by the presence of gamma-emitting isotopes in the geologic formations and the density of the formations. Generally, higher amplitude gamma responses are interpreted as indicative of finer grained units.
- Fluid temperature logs provide data on air or fluid temperature in the borehole as a function of depth. These logs can indicate movement of water into or out of the borehole based on the deviation of the results from the normal geothermal gradient.
- Fluid conductivity logs provide a continuous measurement of the electrical conductivity of borehole fluids. Water with low levels of dissolved solids will yield a low fluid conductivity, while water containing high levels of dissolved solids will be proportionally more conductive. Deflections in these logs can indicate water-producing features where waters of differing chemistries are mixing.

The geophysical logs were collected by lowering sondes into the borehole. A wireline logger was used to transmit data from the sonde to a computer. All logs were collected from the bottom of the borehole to the top. A geophysical logging report is found in Appendix B.

Geophysical logging was conducted on two separate dates to minimize the amount of time the boreholes were left open prior to monitoring well construction.

- August 8, 2007 - MW-123D, MW-123I, MW-124D, MW-124I
- August 17, 2007 - MW-2R-D, MW-2R-I, MW-110D, MW-110I, MW-125I

The results of the geophysical logging are summarized below and presented in Appendix B. It should be noted that although intermediate and deep wells are located within a 10-foot radius, the logs do not always correlate well.

Well Name	Geophysical Results[1]	
MW-2R-D	Caliper	Borehole enlargements at 46.5, 48.25, 150.75, 190 and 198 feet bgs
	Natural Gamma	No significant changes in gamma response
	Fluid Temperature	No significant slope changes, slope off-sets or deviations
	Fluid Conductivity	Significant slope changes at 178.8 and 193 feet bgs
MW-2R-I	Caliper	Borehole enlargement at 72 feet bgs
	Natural Gamma	No significant changes in gamma response

Well Name	Geophysical Results[1]	
	Fluid Temperature	Significant slope change at 63.5 feet bgs
	Fluid Conductivity	Significant slope changes at 54.25 and 71 feet bgs
MW-110D	Caliper	Borehole enlargements at 81.25, 85.25-87.25, 97.5, 105-106.5, 147.5, and 181.75
	Natural Gamma	No significant changes in gamma response
	Fluid Temperature	Significant slope change at 106 feet bgs
	Fluid Conductivity	Significant slope changes at 66.75, 86.5 and 97.25 feet bgs
MW-110I	Caliper	Borehole enlargements at 57.7 and 66.25 feet bgs
	Natural Gamma	No significant changes in gamma response
	Fluid Temperature	No significant slope changes, slope off-sets or deviations
	Fluid Conductivity	Significant slope change at 63 feet bgs
MW-123D	Caliper	Borehole enlargements at 47, 56, 68.5, 75.5, 90.5, 101, 128.25, 133.25, 158, 185.75, and 194.5 to 196.5 feet bgs
	Natural Gamma	No significant changes in gamma response
	Fluid Temperature	No significant slope changes, slope off-sets or deviations
	Fluid Conductivity	Significant slope changes at 47, 50.25, 67, 90, and 132.5 feet bgs; slope off-set at 127.5 feet bgs
MW-123I	Caliper	Borehole enlargements at 57, 62, and 66 feet bgs
	Natural Gamma	No significant changes in gamma response
	Fluid Temperature	No significant slope changes, slope off-sets or deviations
	Fluid Conductivity	Significant slope change at 50.5 feet bgs
MW-124D	Caliper	Borehole enlargements at 84.25, 92, and 93 feet bgs
	Natural Gamma	No significant changes in gamma response
	Fluid Temperature	No significant slope changes, slope off-sets or deviations
	Fluid Conductivity	Significant slope changes at 48 and 54.25 feet bgs; slope off-sets at 62.5, 66.5 and 186 feet bgs

Well Name	Geophysical Results[1]	
MW-124I	Caliper	Borehole enlargement at 53.25
	Natural Gamma	No significant changes in gamma response
	Fluid Temperature	No significant slope changes, slope off-sets or deviations
	Fluid Conductivity	Significant slope change at 53.5 feet bgs
MW-125I	Caliper	Borehole enlargement at 43 feet bgs
	Natural Gamma	No significant changes in gamma response
	Fluid Temperature	No significant slope changes, slope off-sets or deviations
	Fluid Conductivity	Significant slope off-set at 49.5 feet bgs

1 Results are as reported by CDM's geophysical subcontractor Mid-Atlantic Geosciences.

Bedrock Well Completion

Screen intervals were selected based on the field observations, geophysical logging and the site conceptual model. It shall be noted that the screen intervals were determined not only based on the most fractured zone, but also based on the targeted contaminant monitoring zones. The final screen interval and the rationale for their determination are following:

Well Name	Screen Interval (feet bgs)	Rationale for Screen Intervals
MW-2RI	64 - 74	Based on temperature, conductivity and caliper geophysical logging results at targeted monitoring zone
MW-2RD	188 - 198	Based on conductivity and caliper geophysical logging results at targeted monitoring zone
MW-110I	60 - 70	Based on conductivity and caliper geophysical logging results at targeted monitoring zone
MW-110D	180 - 190	Based on targeted monitoring zone and caliper at 181.75 feet bgs.
MW-123I	50 - 60	Based on targeted monitoring zone and caliper at 62 feet bgs.
MW-123D	188 - 198	Based on targeted monitoring zone and caliper at 181.75 feet bgs.

Well Name	Screen Interval (feet bgs)	Rationale for Screen Intervals
MW-124I	53.5 - 63.5	Based on conductivity and caliper geophysical logging results at targeted monitoring zone
MW-124D	185 - 195	Based on targeted monitoring zone and conductivity geophysical logging result
MW-125I	48 - 58	Based on targeted monitoring zone and conductivity geophysical logging result

MW-125I was partially backfilled with grout from 75 feet bgs to 62.5 feet bgs, 4.5 feet below the proposed screen depth determined during the geophysical surveying before installing the monitoring well. The grout was allowed to set for at least 24 hours before the wells were constructed, and 1.5 feet of No.00 sand was placed on top of the grout, then No. 01 sand was placed up to the bottom of the well.

Bedrock wells were constructed with four-inch diameter stainless steel casing and a ten-foot 0.010 slot stainless steel well screen. The wells were surrounded by a filter pack consisting of No. 01 sand, extending from one foot below the base of the well screen to at least 2 feet above the top of the well screen. Two feet of well-rounded, washed, silica sand seal (No. 00) was installed above the filter pack. Cement-bentonite grout was placed above the No. 00 sand seal to just below ground surface. The wells were completed with flush mounted protective steel casings, surrounded by a two-foot by two-foot concrete well pad with a surface that slopes away from the protective surface casing to create a drainage apron. The wells were developed to improve the hydraulic connection with the aquifer. Well development continued until the turbidity stabilized and periodic measurements of pH, specific conductance, and temperature stabilized within ten percent.

2.2 Synoptic Water Level Measurements

The synoptic water level measurements are used to determine the direction of the groundwater gradient in the overburden aquifer as well as in the intermediate and deep portions of the bedrock aquifer. CDM collected one round of synoptic water level measurements from 63 existing and new monitoring wells on November 5, 2007. Water levels were measured with a water level meter from a surveyed reference point marked on the inner casing of each well. Monitoring well locations are presented on Figure 2-1.

2.3 Groundwater Sampling

Following the water level measurements, groundwater samples were collected from 48 wells between November 7 and November 20, 2007. These 48 wells were selected by CDM and approved by USACE, EPA and NJDEP. Among them, 23 were overburden wells, 15 were bedrock wells at intermediate depth, and 10 were deep bedrock wells. All newly installed monitoring wells were sampled. Sampling of existing wells was determined based on the

analytical results from the previous sampling rounds, location of the wells, and elevation of the screened intervals. A summary groundwater samples collected and parameters analyzed is presented in Table 2-2.

EPA Region 2 low flow groundwater sampling procedures were followed during groundwater sampling. At each well location, depth to water was first measured, and then a 2-inch diameter submersible pump (Grundfos Redi-Flo2 pump) was lowered to the middle of the water column. The pumping rate was maintained between 200 and 500 milliliters per minute (mL/min), and the drawdown was kept within 0.3 foot as required by the sampling procedure. The pumped groundwater passed through a flow-through cell equipped with an YSI 650 MSD meter. Water quality parameters, including pH, conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and temperature were recorded within every 5-minute interval. Samples of the effluent were taken at the same time interval periodically and the turbidity was measured using a Lamotte 2020 turbidity meter. Well purging continued until groundwater quality parameters had stabilized. After the stability criteria were satisfied, groundwater samples were collected.

Groundwater samples were analyzed for trace volatile organic compounds (VOCs), low semi-volatile organic compounds (SVOCs), iron, manganese, and natural attenuation (NA) parameters including alkalinity, nitrate/nitrite, sulfate, sulfide, and methane, ethane, and ethene (MEE). The low SVOC analysis include all the PAHs identified during the RI as site-related contaminants. The analytical method for each analysis is listed in Table 2-3. Ferrous iron and manganese analyses were performed in the on-site trailer with a HACH DR/890 colorimeter.

Site groundwater samples were analyzed through the EPA's Contract Laboratory Program (CLP), where possible. Sample analyses were conducted by different laboratories, as following:

- Trace VOCs and low SVOCs samples were sent to Chemtech Consulting Group located at 284 Sheffield Street, Mountainside, New Jersey;
- Iron and manganese samples were sent to Bonner Analytical Testing Company, located at 2703 Oak Grove Road, Hattiesburg, Mississippi;
- MEE samples were sent to CDM's subcontract laboratory, Katahdin Analytical Services, Incorporation located at 600 Technology Way, Scarborough, Maine; and
- The remaining NA samples were delivered to EPA Division of Environmental Science and Assessment (DESA) located at Edison, New Jersey.

Three field duplicates were collected. MW-601I-Y3 was a duplicate of MW-116I-Y3; MW-602I-Y3 was a duplicate of MW-2RI-Y3; and MW-603S-Y3 was a duplicate of MW-126S-Y3. One field blank (FB) (rinsate blank) was taken every day. Trip blanks (TB) were sent with each cooler containing samples for VOC or MEE analyses. Each sample cooler contained a temperature blank. Field blank, trip blank and temperature blank samples were sent together with environmental samples at the end of every day. Two sets of matrix spike (MS) and matrix spike duplicate (MSD) were collected from monitoring wells MW-125I and MW-8I for iron and manganese analyses.

The investigation derived waste (IDW) was left to SES for proper disposal.

Table 3-5
Groundwater Field Parameters
Year 3 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Sample Well	Sampling Date	Final Depth to Water (ft. TIC)	Flow Rate (mL/min.)	pH	Spefic Conductivity (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Temp (°C)
MW-1RS	11/16/2007	22.31	420	6.42	0.507	20.2	4.18	184.4	17.09
MW-2RD	11/19/2007	22.05	360	7.63	0.636	1.2	0.63	31.8	13.48
MW-2RI	11/19/2007	21.41	480	7.67	0.757	7.8	0.42	-210.5	13.48
MW-2RS	11/19/2007	21.23	480	6.57	0.603	14.8	3.17	-84.1	15.18
MW-4D	11/19/2007	15.48	460	7.45	2.119	13	0.27	-78.2	13.27
MW-5I	11/20/2007	13.70	400	7.38	0.594	10	4.17	-91.3	15.21
MW-5S	11/20/2007	12.43	300	5.79	0.258	12	4.24	265.1	16.35
MW-6S	11/20/2007	13.26	440	6.28	0.290	1.6	0.38	-86.4	16.80
MW-7S	11/20/2007	13.37	440	6.34	0.315	6.8	0.45	-84.3	17.37
MW-8I	11/19/2007	14.90	425	7.62	0.577	2.6	1.72	61.1	14.85
MW-9S	11/15/2007	16.69	350	5.73	0.293	1.1	7.01	195.5	18.19
MW-10I	11/14/2007	15.25	375	6.78	0.579	6.2	0.50	-18.9	16.02
MW-10S	11/14/2007	14.99	420	5.88	0.276	0	7.93	220.3	17.04
MW-12RS	11/16/2007	18.47	350	6.30	0.433	17	2.68	99.8	17.16
MW-103S	11/15/2007	21.40	400	5.45	0.245	1.7	7.95	380.4	18.35
MW-104RS	11/16/2007	20.63	450	6.00	1.937	25	9.80	79.8	16.45
MW-105I	11/16/2007	18.52	380	7.41	9.660	12.8	0.67	39.4	14.33
MW-105S	11/16/2007	18.35	480	5.62	0.741	2.6	5.56	330.6	16.55
MW-106S	11/15/2007	18.97	500	6.14	0.334	14	6.92	92.6	18.17
MW-109S	11/14/2007	21.67	460	6.62	0.258	7.15	9.73	270.7	19.53
MW-110D	11/14/2007	20.90	420	7.30	2.357	3	0.72	-51.8	14.26
MW-110I	11/14/2007	21.44	500	7.48	0.688	0.74	5.07	35.8	15.40
MW-110S	11/14/2007	21.00	430	5.76	0.284	4.6	8.83	204.1	18.16
MW-111D	11/15/2007	25.26	420	8.00	0.782	10	2.03	213	15.23
MW-111I	11/15/2007	25.34	400	7.85	0.381	3.7	5.48	152.3	15.82
MW-111S	11/15/2007	25.04	400	6.46	0.999	5	1.30	-67.5	17.17
MW-112D	11/12/2007	17.07	300	7.59	2.535	1.06	13.69	-72.6	13.51
MW-112I	11/12/2007	17.55	500	7.48	0.579	0.85	0.86	177.4	14.30
MW-112S	11/12/2007	17.28	350	5.76	0.258	1.26	4.64	153.1	17.85
MW-114D	11/12/2007	13.23	360	7.60	2.383	0.76	13.94	-59	13.41

Table 3-5
Groundwater Field Parameters
Year 3 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Sample Well	Sampling Date	Final Depth to Water (ft. TIC)	Flow Rate (mL/min.)	pH	Spefic Conductivity (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Temp (°C)
MW-114I	11/12/2007	14.14	400	7.41	0.625	0.8	0.49	-89.9	13.89
MW-114S	11/12/2007	13.60	320	5.66	0.213	2.8	4.28	208.4	16.64
MW-116I	11/9/2007	21.45	360	7.66	0.903	1.9	0.26	-37.2	15.20
MW-117D	11/7/2007	17.17	500	7.62	0.411	2.9	4.98	72.4	15.04
MW-117I	11/7/2007	17.95	340	6.56	0.353	2.2	6.14	135.5	15.24
MW-117S	11/7/2007	17.64	500	5.98	0.816	11.4	7.49	234.6	16.99
MW-118D	11/8/2007	20.59	360	7.67	0.321	5.42	0.41	-31.8	15.25
MW-118I	11/8/2007	19.77	460	7.47	0.452	1.8	4.79	-53	16.34
MW-123D	11/9/2007	20.45	500	7.52	0.931	33.4	0.62	65.4	15.83
MW-123I	11/9/2007	21.43	300	8.99	1.327	4.9	2.71	90.21	18.70
MW-123S	11/9/2007	20.32	450	6.41	1.799	23	2.51	100.7	20.32
MW-124D	11/8/2007	19.81	280	8.69	0.427	4.09	0.73	95.2	16.20
MW-124I	11/8/2007	19.53	280	6.72	1.023	1.73	3.80	123	17.93
MW-124S	11/8/2007	19.55	280	6.57	3.005	9.4	2.85	59.8	21.24
MW-125I	11/13/2007	14.45	360	8.15	0.461	0.76	4.03	213.2	16.80
MW-125S	11/13/2007	12.86	400	5.94	0.285	1.15	3.51	204.3	17.66
MW-126S	11/13/2007	11.03	380	5.95	0.323	5.3	4.63	257.4	18.54
MW-127S	11/13/2007	26.55	450	5.48	0.853	11	3.60	553.7	18.00

DO results seem high for the ORP reading, inconsistent. But no indication of equipment malfunction.

DO:	dissolved oxygen	ft:	feet
mg/L:	miligram per liter	NTU:	nephelometric turbidity units
mL/min.:	mililiter per minute	ORP:	oxidation reduction potential
mS/cm:	microSiemens per centimeter	TIC:	top of inner casing
mV:	milivolt	°C:	degree celsius

Appendix A

Well Construction Diagrams

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Notes:
1. Contaminant concentrations are in ug/L.
2. Concentrations exceeding the screening criteria are shown in bold.

Screening Criteria (µg/L)

Compound	Concentration
Benzo(a)pyrene	5
Benzo(a)anthracene	5
Chrysene	5
Benzo(b)fluoranthene	5
Benzo(k)fluoranthene	5
Indeno(1,2,3-cd)pyrene	5
Dibenz(a,h)anthracene	5
Benzene	1
Naphthalene	300

MW-12S

Compound	2/22/1999	11/16/1999	2005
Benzo(a)pyrene	750 U	400 U	Well Abandoned
Benzo(a)anthracene	750 U	400 U	
Chrysene	750 U	400 U	
Benzo(b)fluoranthene	750 U	400 U	
Benzo(k)fluoranthene	750 U	400 U	
Indeno(1,2,3-cd)pyrene	750 U	400 U	
Dibenz(a,h)anthracene	750 U	400 U	
Benzene	100 U	25 U	
Naphthalene	**9,700**	**13,000**	

MW-12RS

Compound	11/16/2007
Benzo(a)pyrene	5 U
Benzo(a)anthracene	5 U
Chrysene	5 U
Benzo(b)fluoranthene	5 U
Benzo(k)fluoranthene	5 U
Indeno(1,2,3-cd)pyrene	5 U
Dibenz(a,h)anthracene	5 U
Benzene	0.5 U
Naphthalene	5 U

MW-2RS

Compound	11/19/2007
Benzo(a)pyrene	5 U
Benzo(a)anthracene	5 U
Chrysene	5 U
Benzo(b)fluoranthene	5 U
Benzo(k)fluoranthene	5 U
Indeno(1,2,3-cd)pyrene	5 U
Dibenz(a,h)anthracene	5 U
Benzene	**23**
Naphthalene	**5,500**

MW-11S

Compound	2/22/1999	11/11/1999	2005
Benzo(a)pyrene	480 U	10 U	Well Abandoned
Benzo(a)anthracene	480 U	10 U	
Chrysene	480 U	10 U	
Benzo(b)fluoranthene	480 U	10 U	
Benzo(k)fluoranthene	480 U	10 U	
Indeno(1,2,3-cd)pyrene	480 U	10 U	
Dibenz(a,h)anthracene	480 U	10 U	
Benzene	**47 J**	100 U	
Naphthalene	**9,500**	**11,000**	

MW-104S

Compound	2/23/1999	11/8/1999	2005	2006	MW-104RS 11/16/2007
Benzo(a)pyrene	10 U	10 U	Well Abandoned	Well Abandoned	5 U
Benzo(a)anthracene	10 U	10 U			5 U
Chrysene	10 U	10 U			5 U
Benzo(b)fluoranthene	10 U	10 U			5 U
Benzo(k)fluoranthene	10 U	10 U			5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U			5 U
Dibenz(a,h)anthracene	10 U	10 U			5 U
Benzene	1 U	1 U			0.5 U
Naphthalene	10 U	10 U			5 U

MW-123S

Compound	11/9/2007
Benzo(a)pyrene	4.7 U
Benzo(a)anthracene	4.7 U
Chrysene	4.7 U
Benzo(b)fluoranthene	4.7 U
Benzo(k)fluoranthene	4.7 U
Indeno(1,2,3-cd)pyrene	4.7 U
Dibenz(a,h)anthracene	4.7 U
Benzene	0.5 U
Naphthalene	4.7 U

MW-105S

Compound	2/23/1999	11/8/1999	11/4/2005	10/24/2006	11/16/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	5 U

MW-124S

Compound	11/8/2007
Benzo(a)pyrene	4.9 U
Benzo(a)anthracene	4.9 U
Chrysene	4.9 U
Benzo(b)fluoranthene	4.9 U
Benzo(k)fluoranthene	4.9 U
Indeno(1,2,3-cd)pyrene	4.9 U
Dibenz(a,h)anthracene	4.9 U
Benzene	0.5 U
Naphthalene	4.9 U

MW-117S

Compound	7/20/1999	11/3/1999	11/2/2005	10/18/2006	11/7/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	4.9 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	4.9 U
Chrysene	10 U	10 U	10 U	5 U	4.9 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	4.9 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	4.9 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	4.9 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	4.9 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	4.9 U

MW-103S

Compound	2/25/1999	11/10/1999	2005	2006	11/15/2007
Benzo(a)pyrene	11 U	10 U	Not Sampled	Not Sampled	5 UJ
Benzo(a)anthracene	11 U	10 U			5 UJ
Chrysene	11 U	10 U			5 UJ
Benzo(b)fluoranthene	11 U	10 U			5 UJ
Benzo(k)fluoranthene	11 U	10 U			5 UJ
Indeno(1,2,3-cd)pyrene	11 U	10 U			5 UJ
Dibenz(a,h)anthracene	11 U	10 U			5 UJ
Benzene	1 U	1 U			0.5 U
Naphthalene	1 J	10 U			5 U

MW-106S

Compound	2/25/1999	11/9/1999	2005	2006	11/15/2007
Benzo(a)pyrene	10 U	10 U	Not Sampled	Not Sampled	5 R
Benzo(a)anthracene	10 U	10 U			5 UJ
Chrysene	10 U	10 U			5 UJ
Benzo(b)fluoranthene	10 U	10 U			5 R
Benzo(k)fluoranthene	10 U	10 U			5 R
Indeno(1,2,3-cd)pyrene	10 U	10 U			5 R
Dibenz(a,h)anthracene	10 U	10 U			5 R
Benzene	1 U	1 U			0.5 U
Naphthalene	10 U	10 U			5 U

MW-1S

Compound	2/23/1999	11/4/1999	2005	2006	MW-1RS 11/16/2007
Benzo(a)pyrene	10 U	10 U	Well Abandoned	Well Abandoned	5 U
Benzo(a)anthracene	10 U	10 U			5 U
Chrysene	10 U	10 U			5 U
Benzo(b)fluoranthene	10 U	10 U			5 U
Benzo(k)fluoranthene	10 U	10 U			5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U			5 U
Dibenz(a,h)anthracene	10 U	10 U			5 UJ
Benzene	1 U	1 U			0.5 U
Naphthalene	10 U	10 U			5 U

MW-108S

Compound	2/24/1999	11/9/1999	11/10/2005	10/25/2006	2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	Not Sampled
Benzo(a)anthracene	10 U	10 U	10 U	5 U	
Chrysene	10 U	10 U	10 U	5 U	
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	
Benzene	1 U	1 U	0.5 U	0.5 U	
Naphthalene	10 U	10 U	10 U	5 U	

MW-120S

Compound	11/2/1999	12/15/1999	2005
Benzo(a)pyrene	10 U	10 U	Well Abandoned
Benzo(a)anthracene	10 U	10 U	
Chrysene	10 U	10 U	
Benzo(b)fluoranthene	10 U	10 U	
Benzo(k)fluoranthene	10 U	10 U	
Indeno(1,2,3-cd)pyrene	10 U	10 U	
Dibenz(a,h)anthracene	10 U	10 U	
Benzene	1 U	1 U	
Naphthalene	170	180	

MW-109S

Compound	2/24/1999	11/9/1999	2005	2006	11/14/2007
Benzo(a)pyrene	10 U	10 U	Not Sampled	Not Sampled	5 U
Benzo(a)anthracene	10 U	10 U			5 U
Chrysene	10 U	10 U			5 U
Benzo(b)fluoranthene	10 U	10 U			5 U
Benzo(k)fluoranthene	10 U	10 U			5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U			5 U
Dibenz(a,h)anthracene	10 U	10 U			5 U
Benzene	1 U	1 U			0.5 U
Naphthalene	10 U	10 U			5 U

MW-10S

Compound	2/22/1999	11/12/1999	2005	2006	11/14/2007
Benzo(a)pyrene	10 U	10 U	Not Sampled	Not Sampled	5 U
Benzo(a)anthracene	10 U	10 U			5 U
Chrysene	10 U	10 U			5 U
Benzo(b)fluoranthene	10 U	10 U			5 U
Benzo(k)fluoranthene	10 U	10 U			5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U			5 U
Dibenz(a,h)anthracene	10 U	10 U			5 U
Benzene	1 U	1 U			0.5 U
Naphthalene	10 U	10 U			5 U

MW-119S

Compound	11/1/1999	12/13/1999	11/3/2005	10/23/2006	2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	Not Sampled
Benzo(a)anthracene	10 U	10 U	10 U	5 U	
Chrysene	10 U	10 U	10 U	5 U	
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	
Benzene	20 U	1 U	0.5 U	0.5 U	
Naphthalene	10 U	10 U	10 U	5 U	

MW-9S

Compound	2/23/1999	11/11/1999	2005	2006	11/15/2007
Benzo(a)pyrene	10 U	10 U	Not Sampled	Not Sampled	5 R
Benzo(a)anthracene	10 U	10 U			5 R
Chrysene	10 U	10 U			5 R
Benzo(b)fluoranthene	10 U	10 U			5 R
Benzo(k)fluoranthene	10 U	10 U			5 R
Indeno(1,2,3-cd)pyrene	10 U	10 U			5 R
Dibenz(a,h)anthracene	10 U	10 U			5 R
Benzene	1 U	1 U			0.5 U
Naphthalene	10 U	10 U			5 UJ

MW-102S

Compound	2/24/1999	11/5/1999	2005
Benzo(a)pyrene	20 U	10 U	Well Abandoned
Benzo(a)anthracene	20 U	10 U	
Chrysene	20 U	10 U	
Benzo(b)fluoranthene	20 U	10 U	
Benzo(k)fluoranthene	20 U	10 U	
Indeno(1,2,3-cd)pyrene	20 U	10 U	
Dibenz(a,h)anthracene	20 U	10 U	
Benzene	1 U	0.7 J	
Naphthalene	20 U	8 J	

MW-111S

Compound	7/26/1999	11/12/1999	2005	10/17/2006	11/15/2007
Benzo(a)pyrene	10 U	10 U	Not Sampled	5 U	5 U
Benzo(a)anthracene	0.5 J	10 U		5 U	5 U
Chrysene	0.4 J	10 U		5 U	5 U
Benzo(b)fluoranthene	10 U	10 U		5 U	5 U
Benzo(k)fluoranthene	10 U	10 U		5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U		5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U		5 U	5 U
Benzene	1 U	1 U		0.5 U	0.5 U
Naphthalene	10 U	10 U		92	61

MW-110S

Compound	2/25/1999	11/5/1999	2005	2006	11/14/2007
Benzo(a)pyrene	10 U	10 U	Not Sampled	Not Sampled	5 U
Benzo(a)anthracene	10 U	10 U			5 U
Chrysene	10 U	10 U			5 U
Benzo(b)fluoranthene	10 U	10 U			5 U
Benzo(k)fluoranthene	10 U	10 U			5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U			5 U
Dibenz(a,h)anthracene	10 U	10 U			5 U
Benzene	1 U	1 U			0.5 U
Naphthalene	10 U	10 U			5 U

MW-126S

Compound	11/13/2007
Benzo(a)pyrene	5 U
Benzo(a)anthracene	5 U
Chrysene	5 U
Benzo(b)fluoranthene	5 U
Benzo(k)fluoranthene	5 U
Indeno(1,2,3-cd)pyrene	5 U
Dibenz(a,h)anthracene	5 U
Benzene	0.5 U
Naphthalene	5 U

MW-125S

Compound	11/13/2007
Benzo(a)pyrene	5 U
Benzo(a)anthracene	5 U
Chrysene	5 U
Benzo(b)fluoranthene	5 U
Benzo(k)fluoranthene	5 U
Indeno(1,2,3-cd)pyrene	5 U
Dibenz(a,h)anthracene	5 U
Benzene	0.5 U
Naphthalene	5 U

MW-112S

Compound	7/21/1999	11/4/1999	2005	2006	11/12/2007
Benzo(a)pyrene	10 U	10 U	Not Sampled	Not Sampled	5 U
Benzo(a)anthracene	10 U	10 U			5 U
Chrysene	10 U	10 U			5 U
Benzo(b)fluoranthene	10 U	10 U			5 U
Benzo(k)fluoranthene	10 U	10 U			5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U			5 U
Dibenz(a,h)anthracene	10 U	10 U			5 U
Benzene	1 U	1 U			0.5 U
Naphthalene	10 U	10 U			5 U

MW-127S

Compound	11/13/2007
Benzo(a)pyrene	5 U
Benzo(a)anthracene	5 U
Chrysene	5 U
Benzo(b)fluoranthene	5 U
Benzo(k)fluoranthene	5 U
Indeno(1,2,3-cd)pyrene	5 U
Dibenz(a,h)anthracene	5 U
Benzene	0.5 U
Naphthalene	5 U

MW-7S

Compound	2/24/1999	11/17/1999	11/10/2005	10/26/2006	11/20/2007
Benzo(a)pyrene	**11 J**	3 J	**5 J**	**5.5**	5 U
Benzo(a)anthracene	**21 J**	**6 J**	**10**	**12**	4.6 J
Chrysene	**14 J**	4 J	**8 J**	**7.9**	3.5 J
Benzo(b)fluoranthene	**9 J**	3 J	**7 J**	**7.1**	5 U
Benzo(k)fluoranthene	**13 J**	4 J	2 J	2.7 J	5 U
Indeno(1,2,3-cd)pyrene	48 U	1 J	3 J	2.1 J	5 U
Dibenz(a,h)anthracene	48 U	10 U	10 U	5 U	5 U
Benzene	**25**	**32**	**12**	**9 J**	**13**
Naphthalene	**3,700**	**6,600**	**1,800**	**5,400**	**4,900**

MW-6S

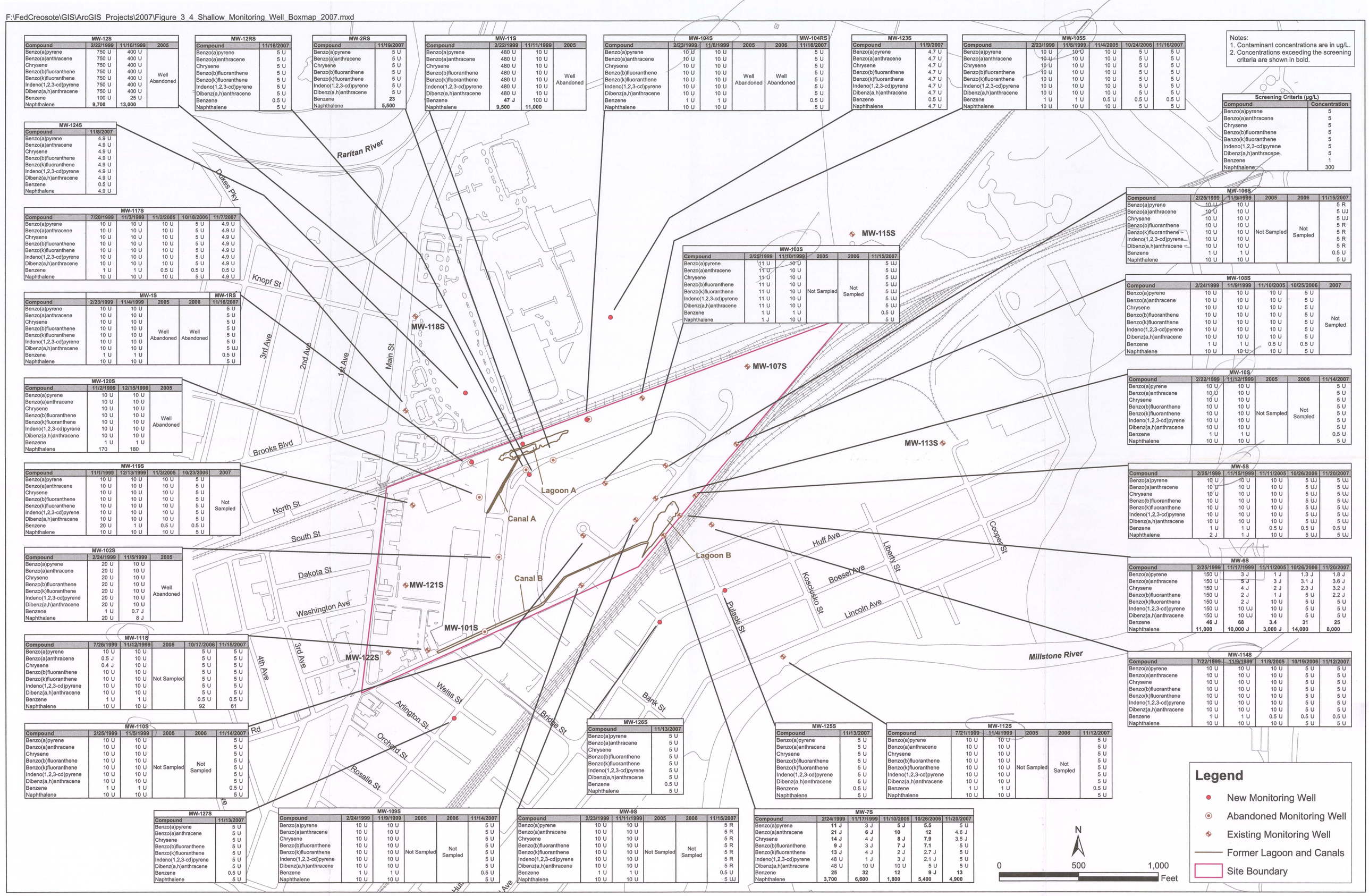
Compound	2/25/1999	11/17/1999	11/11/2005	10/26/2006	11/20/2007
Benzo(a)pyrene	150 U	3 J	1 J	1.3 J	1.8 J
Benzo(a)anthracene	150 U	5 J	3 J	3.1 J	3.6 J
Chrysene	150 U	4 J	2 J	2.3 J	3.2 J
Benzo(b)fluoranthene	150 U	2 J	1 J	5 U	2.2 J
Benzo(k)fluoranthene	150 U	2 J	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	150 U	10 UJ	10 U	5 U	5 U
Dibenz(a,h)anthracene	150 U	10 UJ	10 U	5 U	5 U
Benzene	**46 J**	**68**	**3.4**	**31**	**25**
Naphthalene	**11,000**	**10,000 J**	**3,000 J**	**14,000**	**8,000**

MW-114S

Compound	7/22/1999	11/9/1999	11/9/2005	10/19/2006	11/12/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	5 U

MW-5S

Compound	2/25/1999	11/15/1999	11/11/2005	10/26/2006	11/20/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 UJ	5 UJ
Benzo(a)anthracene	10 U	10 U	10 U	5 UJ	5 UJ
Chrysene	10 U	10 U	10 U	5 UJ	5 UJ
Benzo(b)fluoranthene	10 U	10 U	10 U	5 UJ	5 UJ
Benzo(k)fluoranthene	10 U	10 U	10 U	5 UJ	5 UJ
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 UJ	5 UJ
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 UJ	5 UJ
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	2 J	1 J	10 U	5 UJ	5 UJ



Legend

- New Monitoring Well
- Abandoned Monitoring Well
- Existing Monitoring Well
- Former Lagoon and Canals
- Site Boundary

N

0 500 1,000 Feet

CDM

Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-4
Contaminants of Concern Concentrations
Overburden

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Notes:
1. Contaminant concentrations are in ug/L.
2. Concentrations exceeding the screening criteria are shown in bold.

Screening Criteria (µg/L)

Compound	Concentration
Benzo(a)pyrene	5
Benzo(a)anthracene	5
Chrysene	5
Benzo(b)fluoranthene	5
Benzo(k)fluoranthene	5
Indeno(1,2,3-cd)pyrene	5
Dibenz(a,h)anthracene	5
Benzene	1
Naphthalene	300

MW-2I / MW-2RI

Compound	7/27/1999	11/12/1999	2005	2006	MW-2RI 11/19/2007
Benzo(a)pyrene	2000 U	10 U	Well Abandoned	Well Abandoned	5 U
Benzo(a)anthracene	2000 U	10 U			5 U
Chrysene	2000 U	10 U			5 U
Benzo(b)fluoranthene	2000 U	10 U			5 U
Benzo(k)fluoranthene	2000 U	10 U			5 U
Indeno(1,2,3-cd)pyrene	2000 U	10 U			5 U
Dibenz(a,h)anthracene	2000 U	10 U			5 U
Benzene	25 U	100 U			**2.4**
Naphthalene	**7,600**	**6,500**			**6,100**

MW-124I

Compound	11/8/2007
Benzo(a)pyrene	4.7 U
Benzo(a)anthracene	4.7 U
Chrysene	4.7 U
Benzo(b)fluoranthene	4.7 U
Benzo(k)fluoranthene	4.7 U
Indeno(1,2,3-cd)pyrene	4.7 U
Dibenz(a,h)anthracene	4.7 U
Benzene	0.5 U
Naphthalene	4.7 U

MW-123I

Compound	11/9/2007
Benzo(a)pyrene	4.7 U
Benzo(a)anthracene	4.7 U
Chrysene	4.7 U
Benzo(b)fluoranthene	4.7 U
Benzo(k)fluoranthene	4.7 U
Indeno(1,2,3-cd)pyrene	4.7 U
Dibenz(a,h)anthracene	4.7 U
Benzene	0.5 U
Naphthalene	4.7 U

MW-3I

Compound	7/28/1999	11/10/1999	2005
Benzo(a)pyrene	510 U	10 U	Well Abandoned
Benzo(a)anthracene	510 U	10 U	
Chrysene	510 U	10 U	
Benzo(b)fluoranthene	510 U	10 U	
Benzo(k)fluoranthene	510 U	10 U	
Indeno(1,2,3-cd)pyrene	510 U	10 U	
Dibenz(a,h)anthracene	510 U	10 U	
Benzene	**4 J**	10 U	
Naphthalene	**2,600**	**1,200**	

MW-115I

Compound	7/21/1999	11/4/1999	11/7/2005	10/23/2006	2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	Not Sampled
Benzo(a)anthracene	10 U	10 U	10 U	5 U	
Chrysene	10 U	10 U	10 U	5 U	
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	
Benzene	1 U	1 U	0.5 U	0.5 U	
Naphthalene	10 U	10 U	10 U	5 U	

MW-118I

Compound	7/19/1999	11/3/1999	11/2/2005	10/23/2006	11/8/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 U
Benzene	1 U	1 U	0.13 J	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	5 U

MW-105I

Compound	7/27/1999	11/8/1999	11/4/2005	10/24/2006	11/16/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 UJ	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 UJ	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 UJ	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 UJ	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 UJ	5 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	5 U

MW-113I

Compound	7/22/1999	11/4/1999	11/8/2005	10/19/2006	2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	Not Sampled
Benzo(a)anthracene	10 U	10 U	10 U	5 U	
Chrysene	10 U	10 U	10 U	5 U	
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	
Benzene	1 U	1 U	0.5 U	0.5 U	
Naphthalene	10 U	10 U	10 U	5 U	

MW-117I

Compound	7/20/1999	11/3/1999	11/2/2005	10/18/2006	11/7/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	4.7 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	4.7 U
Chrysene	10 U	10 U	10 U	5 U	4.7 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	4.7 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	4.7 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	4.7 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	4.7 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	4.7 U

MW-12I

Compound	7/28/1999	11/16/1999	2005
Benzo(a)pyrene	2000 U	400 U	Well Abandoned
Benzo(a)anthracene	2000 U	400 U	
Chrysene	2000 U	400 U	
Benzo(b)fluoranthene	2000 U	400 U	
Benzo(k)fluoranthene	2000 U	400 U	
Indeno(1,2,3-cd)pyrene	2000 U	400 U	
Dibenz(a,h)anthracene	2000 U	400 U	
Benzene	10 U	25 U	
Naphthalene	**7,100**	**8,000**	

MW-116I

Compound	7/29/1999	11/11/1999	11/3/2005	10/24/2006	11/9/2007
Benzo(a)pyrene	1000 U	10 U	10 U	5 U	4.7 U
Benzo(a)anthracene	1000 U	2 J	2 J	1.3 J	1.6 J
Chrysene	1000 U	1 J	1 J	5 U	4.7 U
Benzo(b)fluoranthene	1000 U	10 U	10 U	5 U	4.7 U
Benzo(k)fluoranthene	1000 U	10 U	10 U	5 U	4.7 U
Indeno(1,2,3-cd)pyrene	1000 U	10 U	10 U	5 U	4.7 U
Dibenz(a,h)anthracene	1000 U	10 U	10 U	5 U	4.7 U
Benzene	5 U	20 U	0.35 J	0.5 U	0.5 U
Naphthalene	**3800**	**3100**	30	70	71

MW-5I

Compound	7/29/1999	11/15/1999	11/11/2005	10/25/2006	11/20/2007
Benzo(a)pyrene	2000 U	1 J	10 U	5 U	3.2 J
Benzo(a)anthracene	2000 U	2 J	1 J	1.7 J	**5.9**
Chrysene	2000 U	1 J	1 J	1.2 J	**5.7 J**
Benzo(b)fluoranthene	2000 U	10 U	10 U	0.86 J	3.4 J
Benzo(k)fluoranthene	2000 U	1 J	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	2000 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	2000 U	10 U	10 U	5 U	5 U
Benzene	**12**	**12 J**	**7.2 J**	**5.4**	**3.4**
Naphthalene	**6,600**	**11,000**	**7,500**	**2,100 J**	**8,000**

MW-10I

Compound	7/28/1999	11/12/1999	11/9/2005	10/25/2006	11/14/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 UJ	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 UJ	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 UJ	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 UJ	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 UJ	5 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	3 J	5 U	5 U

MW-114I

Compound	7/23/1999	11/9/1999	11/9/2005	10/19/2006	11/12/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 U
Benzene	1 U	1 U	0.84	0.5 U	0.5 U
Naphthalene	0.1 J	63	**310**	8.8	52

MW-110I

Compound	11/14/2007
Benzo(a)pyrene	5 R
Benzo(a)anthracene	5 UJ
Chrysene	5 UJ
Benzo(b)fluoranthene	5 R
Benzo(k)fluoranthene	5 R
Indeno(1,2,3-cd)pyrene	5 R
Dibenz(a,h)anthracene	5 R
Benzene	**1.8**
Naphthalene	5 UJ

MW-125I

Compound	11/13/2007
Benzo(a)pyrene	5 UJ
Benzo(a)anthracene	5 UJ
Chrysene	5 UJ
Benzo(b)fluoranthene	5 UJ
Benzo(k)fluoranthene	5 UJ
Indeno(1,2,3-cd)pyrene	5 UJ
Dibenz(a,h)anthracene	5 UJ
Benzene	0.5 U
Naphthalene	5 UJ

MW-111I

Compound	7/26/1999	11/9/1999	11/7/2005	10/17/2006	11/15/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	5 U

MW-8I

Compound	7/27/1999	11/10/1999	11/10/2005	10/25/2006	11/19/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 U
Benzene	5 U	2 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	1.2 J	5 U

MW-112I

Compound	7/21/1999	11/5/1999	11/8/2005	10/18/2006	11/12/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 UJ
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 UJ
Chrysene	10 U	10 U	10 U	5 U	5 UJ
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 UJ
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 UJ
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 UJ
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 UJ
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	5 UJ

Dukes Pky
Knopf St
Main St
3rd Ave
4th Ave
5th Ave
6th Ave
Weiss St
Oak St
Valle St
Lagoon A
Canal A
Canal B
Lagoon B
T-1
Huff Ave
Roosevelt Ave
Kosciuszko St
Pulaski St
Bank St
Millstone River
Raritan River

Legend

- New Monitoring Well
- Abandoned Monitoring Well
- Existing Monitoring Well
- Former Lagoon and Canals
- Site Boundary

N

0 500 1,000 Feet

CDM

Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-5
Contaminants of Concern Concentrations

F:\FedCreosote\GIS\ArcGIS_Projects\2007\Figure_3_6_Deep Bedrock Monitoring Well_Boxmap_2007.mxd

Notes:
1. Contaminant concentrations are in ug/L.
2. Concentrations exceeding the screening criteria are shown in bold.

Screening Criteria (µg/L)

Compound	Concentration
Benzo(a)pyrene	5
Benzo(a)anthracene	5
Chrysene	5
Benzo(b)fluoranthene	5
Benzo(k)fluoranthene	5
Indeno(1,2,3-cd)pyrene	5
Dibenz(a,h)anthracene	5
Benzene	1
Naphthalene	300

MW-105D

Compound	7/26/1999	11/8/1999	11/4/2005	10/24/2006	2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	Not Sampled
Benzo(a)anthracene	10 U	10 U	10 U	5 U	
Chrysene	10 U	10 U	10 U	5 U	
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	
Benzene	1 U	1 U	0.5 U	0.5 U	
Naphthalene	10 U	10 U	10 U	5 U	

MW-4D

Compound	7/20/1999	11/3/1999	11/10/2005	10/25/2006	11/19/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	5 U

MW-2D / MW-2RD

Compound	7/29/1999	11/11/1999	2005	2006	11/19/2007
Benzo(a)pyrene	2000 U	10 U	Well Abandoned	Well Abandoned	5 U
Benzo(a)anthracene	2000 U	1 J			5 U
Chrysene	2000 U	1 J			5 U
Benzo(b)fluoranthene	2000 U	10 U			5 U
Benzo(k)fluoranthene	2000 U	10 U			5 U
Indeno(1,2,3-cd)pyrene	2000 U	10 U			5 U
Dibenz(a,h)anthracene	2000 U	10 U			5 U
Benzene	**45**	**22**			**12**
Naphthalene	**6,000**	**7,400**			**3,200**

MW-123D

Compound	11/9/2007
Benzo(a)pyrene	4.7 U
Benzo(a)anthracene	4.7 U
Chrysene	4.7 U
Benzo(b)fluoranthene	4.7 U
Benzo(k)fluoranthene	4.7 U
Indeno(1,2,3-cd)pyrene	4.7 U
Dibenz(a,h)anthracene	4.7 U
Benzene	0.5 U
Naphthalene	4.7 U

MW-115D

Compound	7/21/1999	11/4/1999	11/7/2005	10/23/2006	2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	Not Sampled
Benzo(a)anthracene	10 U	10 U	10 U	5 U	
Chrysene	10 U	10 U	10 U	5 U	
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	
Benzene	1 U	1 U	0.5 U	0.5 U	
Naphthalene	10 U	10 U	10 U	5 U	

MW-118D

Compound	7/19/1999	11/2/1999	11/3/2005	10/23/2006	11/8/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	4.7 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	4.7 U
Chrysene	10 U	10 U	10 U	5 U	4.7 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	4.7 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	4.7 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	4.7 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	4.7 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	4.7 U

MW-113D

Compound	7/22/1999	11/4/1999	11/8/2005	10/19/2006	2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	Not Sampled
Benzo(a)anthracene	10 U	10 U	10 U	5 U	
Chrysene	10 U	10 U	10 U	5 U	
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	
Benzene	1 U	1 U	0.5 U	0.5 U	
Naphthalene	10 U	10 U	10 U	5 U	

MW-117D

Compound	7/20/1999	11/3/1999	11/1/2005	10/24/2006	11/7/2007
Benzo(a)pyrene	11 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	11 U	10 U	10 U	5 U	5 U
Chrysene	11 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	11 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	11 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	11 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	11 U	10 U	10 U	5 U	5 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	11 U	10 U	10 U	5 U	5 U

MW-110D

Compound	11/14/2007
Benzo(a)pyrene	5 U
Benzo(a)anthracene	5 U
Chrysene	5 U
Benzo(b)fluoranthene	5 U
Benzo(k)fluoranthene	5 U
Indeno(1,2,3-cd)pyrene	5 U
Dibenz(a,h)anthracene	5 U
Benzene	0.5 U
Naphthalene	5 U

MW-124D

Compound	11/8/2007
Benzo(a)pyrene	4.7 U
Benzo(a)anthracene	4.7 U
Chrysene	4.7 U
Benzo(b)fluoranthene	4.7 U
Benzo(k)fluoranthene	4.7 U
Indeno(1,2,3-cd)pyrene	4.7 U
Dibenz(a,h)anthracene	4.7 U
Benzene	0.5 U
Naphthalene	4.7 U

MW-114D

Compound	7/22/1999	11/9/1999	11/8/2005	10/19/2006	11/12/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 U
Benzene	**7**	**12**	0.19 J	0.5 U	0.57
Naphthalene	8 J	16 U	10 U	5 U	5 U

MW-111D

Compound	7/26/1999	11/9/1999	11/7/2005	11/6/2006	11/15/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	7 J	10 U	10 U	5 U	5 U

MW-8D

Compound	7/27/1999	11/10/1999	11/10/2005	10/25/2006	2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	Not Sampled
Benzo(a)anthracene	10 U	10 U	10 U	5 U	
Chrysene	10 U	10 U	10 U	5 U	
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	
Benzene	1 U	1 U	0.5 U	0.5 U	
Naphthalene	10 U	10 U	10 U	5 U	

MW-112D

Compound	7/21/1999	11/5/1999	11/8/2005	10/19/2006	11/12/2007
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	5 U	5 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	5 U

Raritan River
Dukes Pky
Main St
3rd Ave
2nd Ave
1st Ave
Brooks Blvd
South St
Dakota St
Washington Ave
Camplain Rd
6th Ave
Weiss St
Rosalie St
Lagoon A
Canal A
Canal B
Lagoon B
Huff Ave
Liberty St
Cooper St
Roesel Ave
Roscius St
Pulaski St
Millstone River

N
0 500 1,000 Feet

Legend

- New Monitoring Well
- Abandoned Monitoring Well
- Existing Monitoring Well
- Former Lagoon and Canals
- Site Boundary

CDM

Federal Creosote Superfund Site
Manville, New Jersey

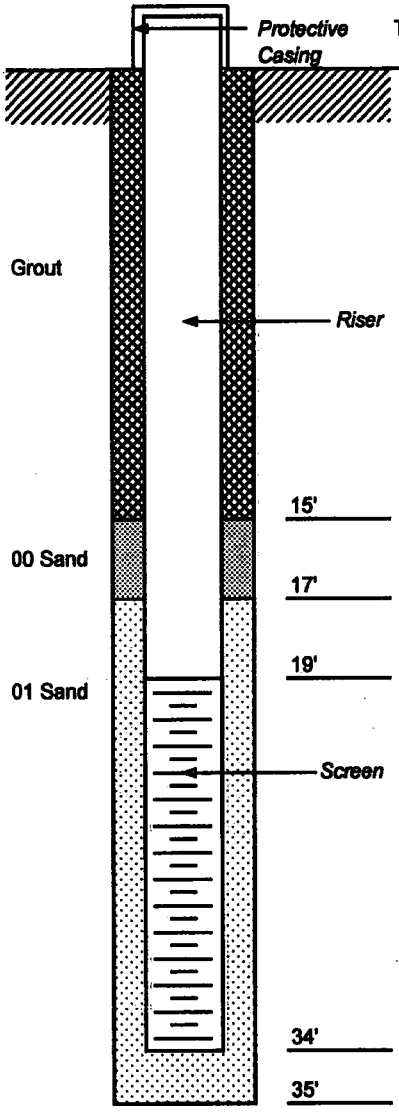
Figure 3-6
Contaminants of Concern Concentrations
Deep Bedrock

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-1RS
Permit No.: 2500068859



Type: Flush mounted

DRILLING SUMMARY

Drilling Company: B&B Drillers: Michael Kinney
Drill Rig/Model: HSA/MOBILE B-61
Borehole Diameters: 8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 35' bgs Depth To Water: 23.03'
Supervisor Geologist: M. Berger

WELL DESIGN

Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/10/2007	7/10/2007
Installation:	7/10/2007	7/11/2007
Development:	9/7/2007	9/7/2007

WELL DEVELOPMENT

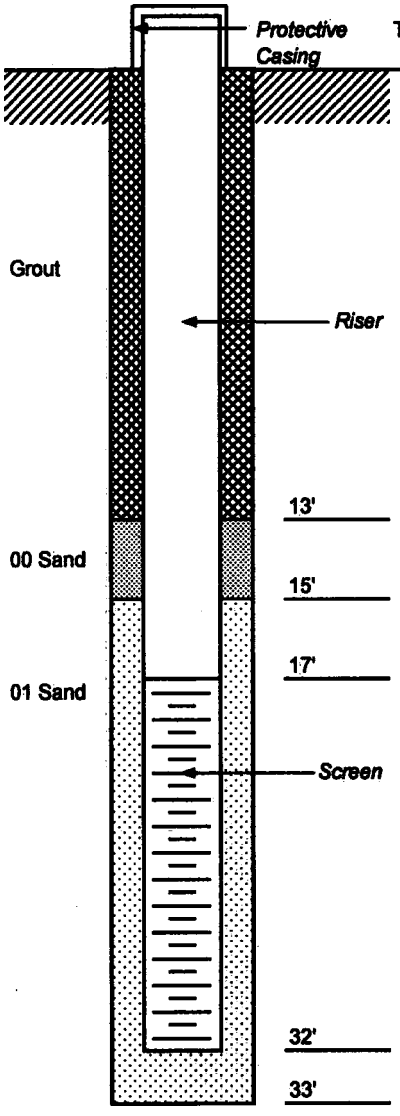
Method: Air Lift
Static Depth to Water: 23.03'
Pumping Depth To Water:
Pumping Rate: 1 gpm Spec. Capacity:
Volume Pumped: 135 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-2RS
Permit No.: 2500068860



Type: Flush mount

DRILLING SUMMARY

Drilling Company: B&B Drillers: Michael Kinney
Drill Rig/Model: HSA/Mobile-B-61
Borehole Diameters: 8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 33' bgs Depth To Water:
Supervisor Geologist: M. Berger

WELL DESIGN

Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/13/2007	7/13/2007
Installation:	7/13/2007	7/16/2007
Development:	9/7/2007	9/10/2007

WELL DEVELOPMENT

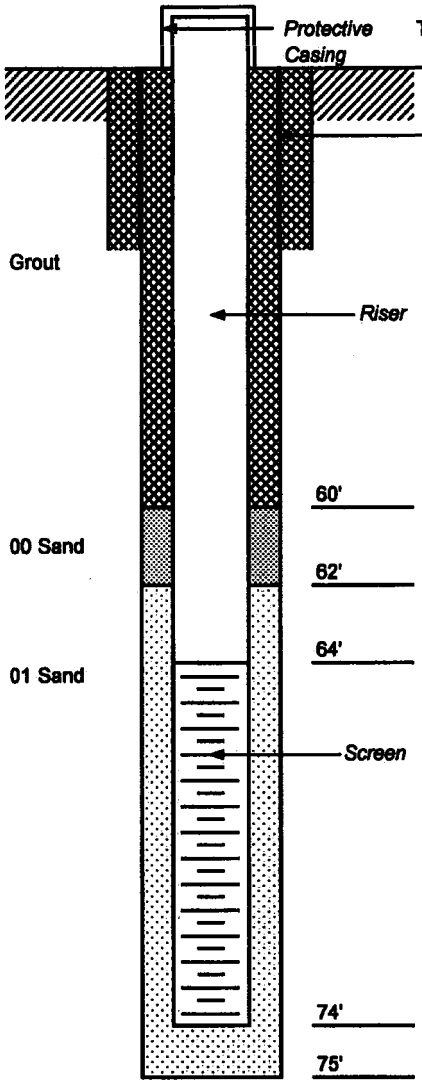
Method: Air Lift
Static Depth to Water: 21.95'
Pumping Depth To Water:
Pumping Rate: Spec. Capacity:
Volume Pumped: 145 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-2RI
Permit No.: 2500068861



Type: Flush mounted

DRILLING SUMMARY

Double casing
Drilling Company: B&B Drillers: Mike and Pete
Drill Rig/Model: Air Rotary/I.R. T-4
Borehole Diameters: 12"/8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 75' bgs Depth To Water: 20.7
Supervisor Geologist: M. Berger

WELL DESIGN

Outer Casing Material:	Steel	Diameter:	8"
Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/26/2007	8/16/2007
Installation:	8/27/2007	8/27/2007
Development:	9/10/2007	9/10/2007

WELL DEVELOPMENT

Method: Air Lift
Static Depth to Water: 20.71'
Pumping Depth To Water:
Pumping Rate: 5 gpm Spec. Capacity:
Volume Pumped: 320 gal

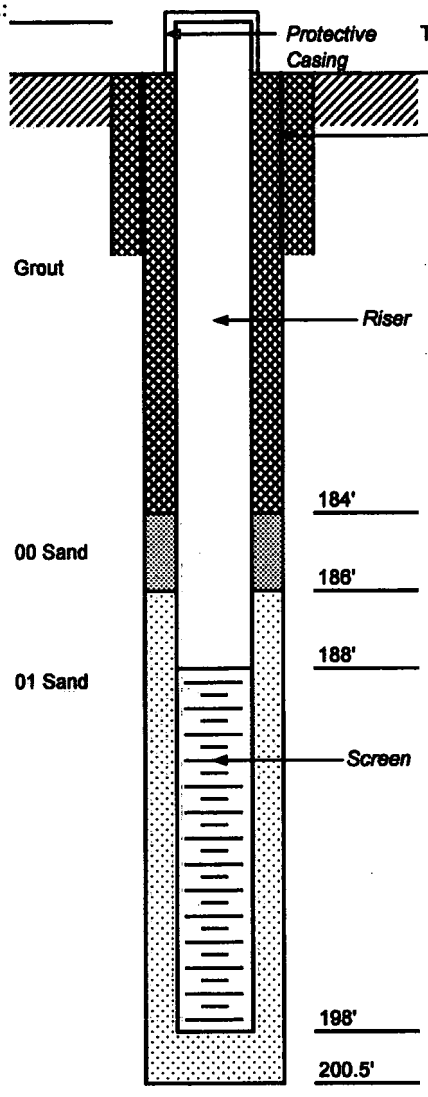
CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-2RD
Permit No.: 2500068862

TOC elev.: _____



Type: _____

DRILLING SUMMARY

Double casing
Drilling Company: B&B Drillers: _____
Drill Rig/Model: Air Rotary/I.R. T-4
Borehole Diameters: 12"/8" Drilling Fluid: air/water
Bits/Depths: _____
Total Depth: 200' bgs Depth To Water: ~21'
Supervisor Geologist: M. Berger

WELL DESIGN

Outer Casing Material:	Steel	Diameter:	8"
Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:		Setting:	

TIME LOG

	Started	Completed
Drilling:	8/16/2007	8/16/2007
Installation:	8/22/2007	8/22/2007
Development:	9/10/2007	9/10/2007

WELL DEVELOPMENT

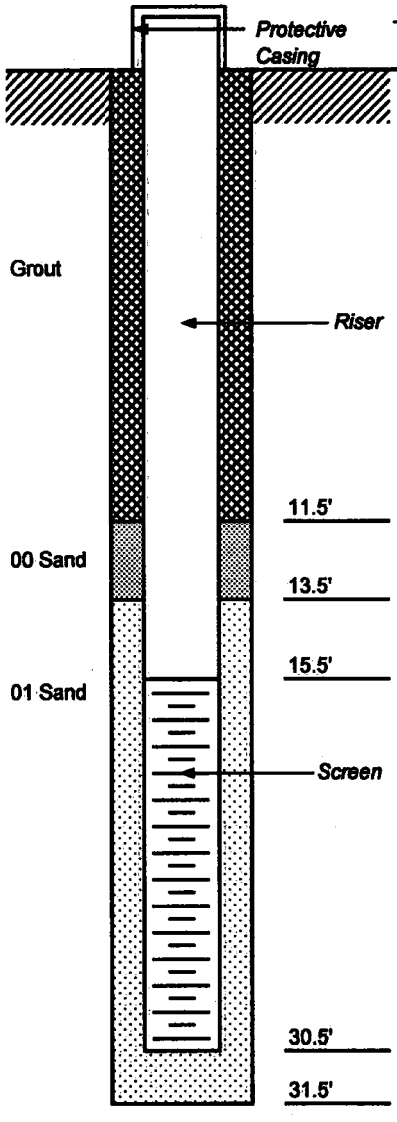
Method: Air Lift
Static Depth to Water: _____
Pumping Depth To Water: _____
Pumping Rate: _____ Spec. Capacity: _____
Volume Pumped: 450 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-12RS
Permit No.: 2500068853



Type: Flush mount

DRILLING SUMMARY

Drilling Company: B&B Drillers: Michael Kinney
Drill Rig/Model: HSA/MOBILE B-61
Borehole Diameters: 8" Drilling Fluid: N/A
Bits/Depths:
Total Depth: 31.5' bgs Depth To Water: 17.0'
Supervisor Geologist: M. Berger

WELL DESIGN

Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/17/2007	7/17/2007
Installation:	7/17/2007	7/17/2007
Development:	8/30/2007	8/30/2007

WELL DEVELOPMENT

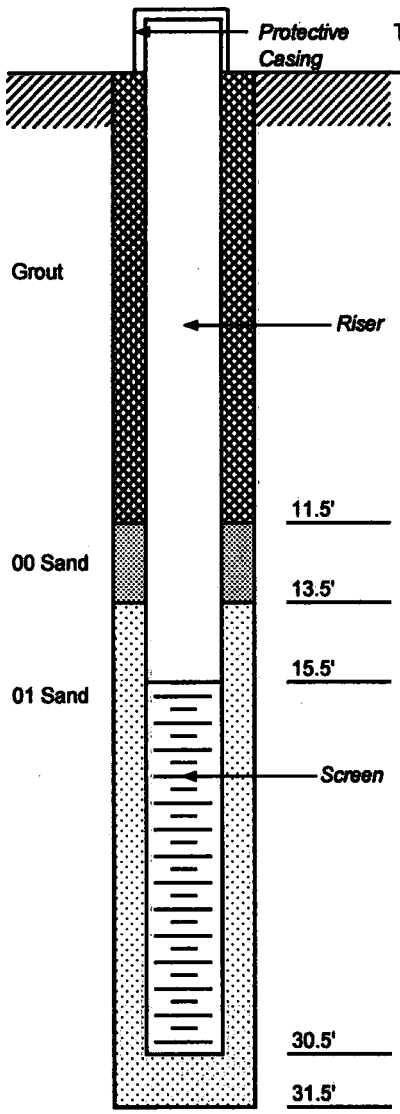
Method: Air Lift
Static Depth to Water: 17.0'
Pumping Depth To Water:
Pumping Rate: Spec. Capacity:
Volume Pumped: 115 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-104RS
Permit No.: 2500068858



Type: Flush mount

DRILLING SUMMARY

Drilling Company: B&B Drillers: Michael Kinney
Drill Rig/Model: HSA/MOBILE B-61
Borehole Diameters: 8" Drilling Fluid: Air/water
Bits/Depths:
Total Depth: 31' bgs Depth To Water: 18.39'
Supervisor Geologist: M. Berger

WELL DESIGN

Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/11/2007	7/11/2007
Installation:	7/12/2007	7/12/2007
Development:	9/6/2007	9/7/2007

WELL DEVELOPMENT

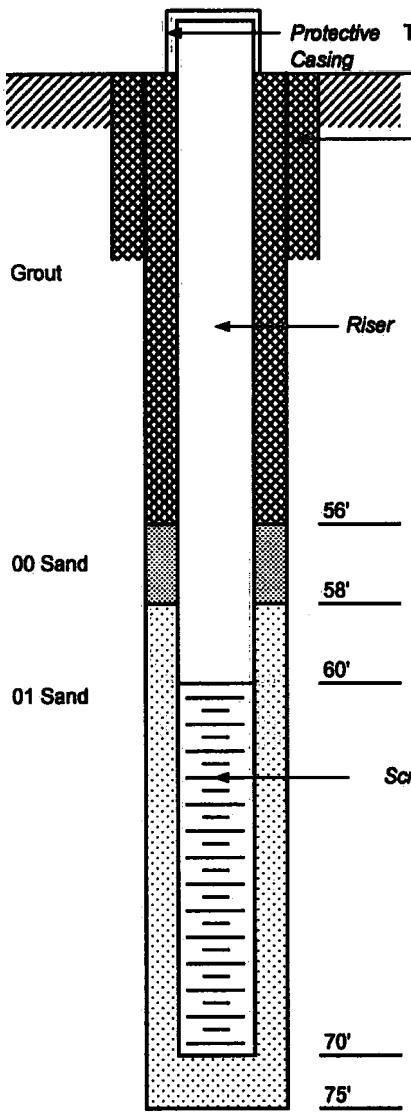
Method: Air Lift
Static Depth to Water: 18.39'
Pumping Depth To Water:
Pumping Rate: 0.5 gpm Spec. Capacity:
Volume Pumped: 135 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-110I
Permit No.: 2500068854



Type: Flush mounted

DRILLING SUMMARY

Double casing

Drilling Company: B&B Drillers: Michael Kinney
Drill Rig/Model: Air Rotary/I.R. T-4
Borehole Diameters: 12"/8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 75' bgs Depth To Water: 20.35'
Supervisor Geologist: S. Kellogg

WELL DESIGN

Outer casing Material:	Steel	Diameter:	8"
Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	8/9/2007	8/9/2007
Installation:	8/27/2007	8/27/2007
Development:	8/31/2007	8/31/2007

WELL DEVELOPMENT

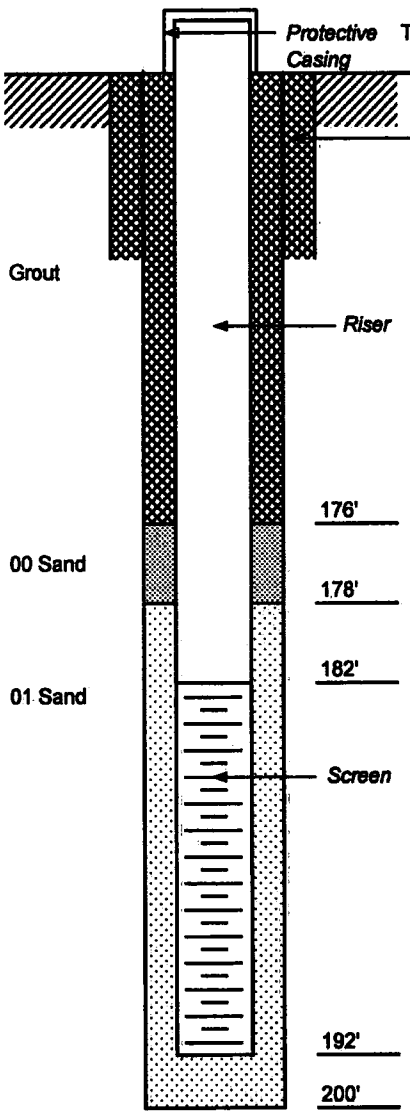
Method: Air Lift
Static Depth to Water: 20.35'
Pumping Depth To Water:
Pumping Rate: Spec. Capacity:
Volume Pumped: 370 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-110D
Permit No.: 2500068855



Type: Flush mounted

DRILLING SUMMARY

Double casing

Drilling Company: B&B Drillers: Mike and Pete
Drill Rig/Model: Air Rotary/I.R. T-4
Borehole Diameters: 12"/8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 200' bgs Depth To Water: 19.88'
Supervisor Geologist: S. Kellogg

WELL DESIGN

Outer Casing Material:	Steel	Diameter:	8"
Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	8/7/2007	8/7/2007
Installation:	8/28/2007	8/28/2007
Development:	9/4/2007	9/4/2007

WELL DEVELOPMENT

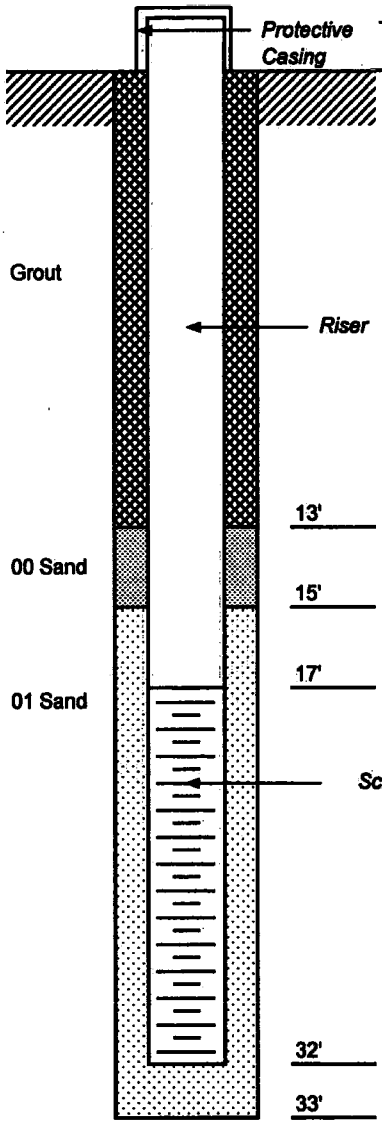
Method: Air Lift
Static Depth to Water: 19.88'
Pumping Depth To Water:
Pumping Rate: Spec. Capacity:
Volume Pumped: 325 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-123S
Permit No.: 2500068843



Type: Flush mount

DRILLING SUMMARY

Drilling Company: B&B Drillers: Michael Kinney
Drill Rig/Model: HSA/MOBILE B-61
Borehole Diameters: 8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 32' bgs Depth To Water: 19.96'
Supervisor Geologist: S. Kellogg

WELL DESIGN

Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/9/2007	7/9/2007
Installation:	7/9/2007	7/9/2007
Development:	9/4/2007	9/5/2007

WELL DEVELOPMENT

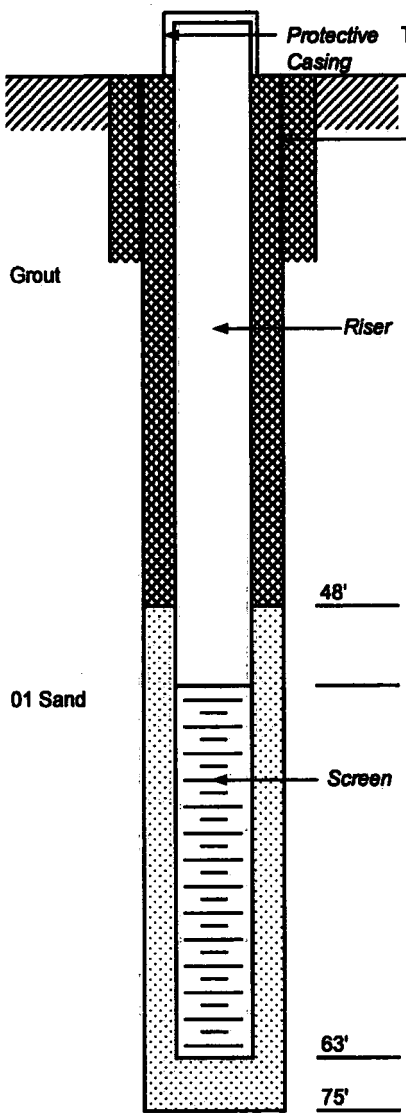
Method: Air Lift
Static Depth to Water: 19.96'
Pumping Depth To Water:
Pumping Rate: Spec. Capacity:
Volume Pumped: 510 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-123I
Permit No.: 2500068844



Type: Flush mounted

DRILLING SUMMARY

Double casing
Drilling Company: B&B Drillers: Michael Kinney
Drill Rig/Model: Air Rotary/I.R. T-4
Borehole Diameters: 12"/8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 32' bgs Depth To Water: 19.51'
Supervisor Geologist: S. Kellogg

WELL DESIGN

Outer Casing Material:	Steel	Diameter:	8"
Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/16/2007	
Installation:	8/20/2007	8/20/2007
Development:	9/5/2007	

WELL DEVELOPMENT

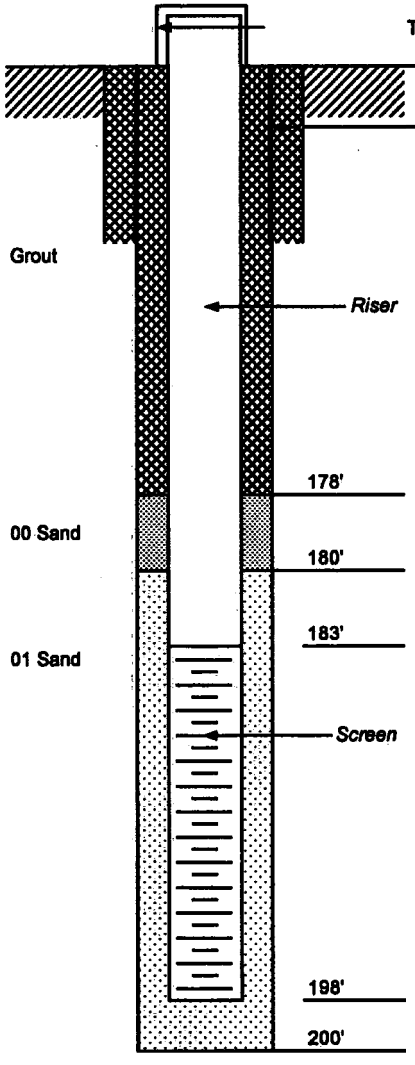
Method: Air Lift
Static Depth to Water: 19.51'
Pumping Depth To Water:
Pumping Rate: Spec. Capacity:
Volume Pumped: 80 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-123D
Permit No.: 2500068845



Type: Flush mounted

DRILLING SUMMARY

Outer casing

Drilling Company: B&B Drillers: Michael Kinney
Drill Rig/Model: Air Rotary/I.R. T-4
Borehole Diameters: 12"/8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 200' bgs Depth To Water: 19.61'
Supervisor Geologist: S. Kellogg

WELL DESIGN

Outer Casing Material:	Steel	Diameter:	8"
Casing Material:	Sch 304 Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/26/2007	7/26/2007
Installation:	8/21/2007	8/21/2007
Development:	9/5/2007	9/5/2007

WELL DEVELOPMENT

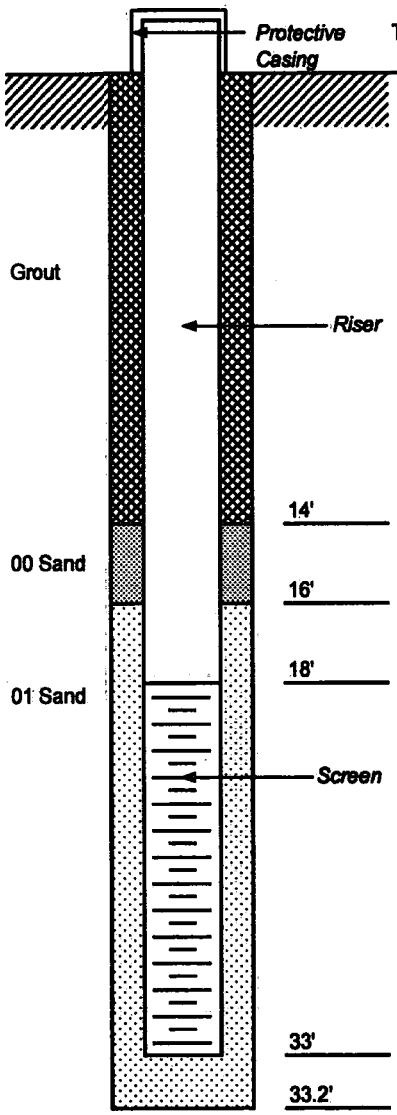
Method: Air Lift
Static Depth to Water: 19.61'
Pumping Depth To Water:
Pumping Rate: 10 gpm Spec. Capacity:
Volume Pumped: 320 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-124S
Permit No.: 2500068846



Type: Flush mount

DRILLING SUMMARY

Drilling Company: B&B Drillers: Michael Kinney
Drill Rig/Model: HSA/MOBILE B-61
Borehole Diameters: 8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 33.2' Depth To Water: 18.49'
Supervisor Geologist: S. Kellogg, M. Berger

WELL DESIGN

Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	8/3/2007	8/3/2007
Installation:	8/3/2007	8/3/2007
Development:	9/6/2007	9/6/2007

WELL DEVELOPMENT

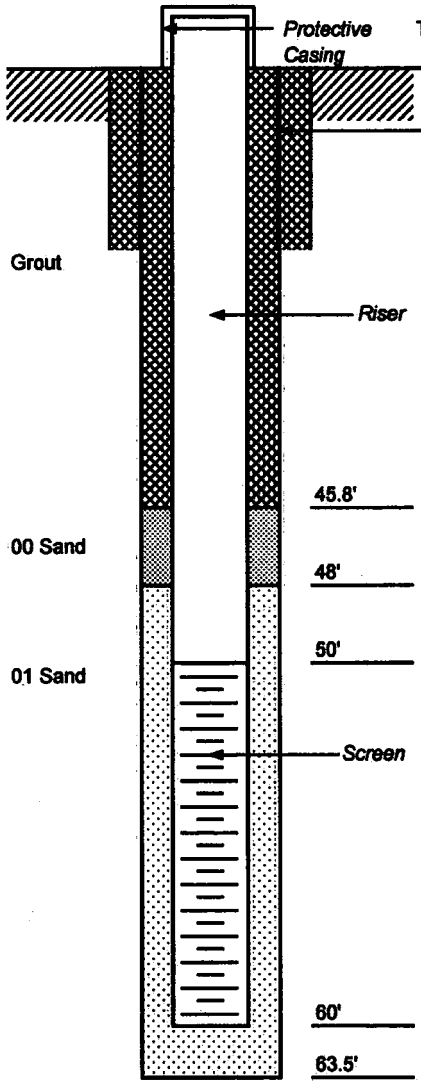
Method: Air Lift
Static Depth to Water: 18.49'
Pumping Depth To Water:
Pumping Rate: Spec. Capacity:
Volume Pumped: 150 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-124I
Permit No.: 2500068847



Type: Flush mounted

DRILLING SUMMARY

Outer casing
Drilling Company: B&B Drillers: Michael Finney
Drill Rig/Model: Air Rotary/I.R. T-4
Borehole Diameters: 12"/8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 75' bgs Depth To Water: 18.41'
Supervisor Geologist: S. Kellogg

WELL DESIGN

Outer Casing Material:	Steel	Diameter:	8"
Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:		Setting:	

TIME LOG

	Started	Completed
Drilling:	8/2/2007	8/2/2007
Installation:	8/13/2007	8/13/2007
Development:	9/6/2007	9/6/2007

WELL DEVELOPMENT

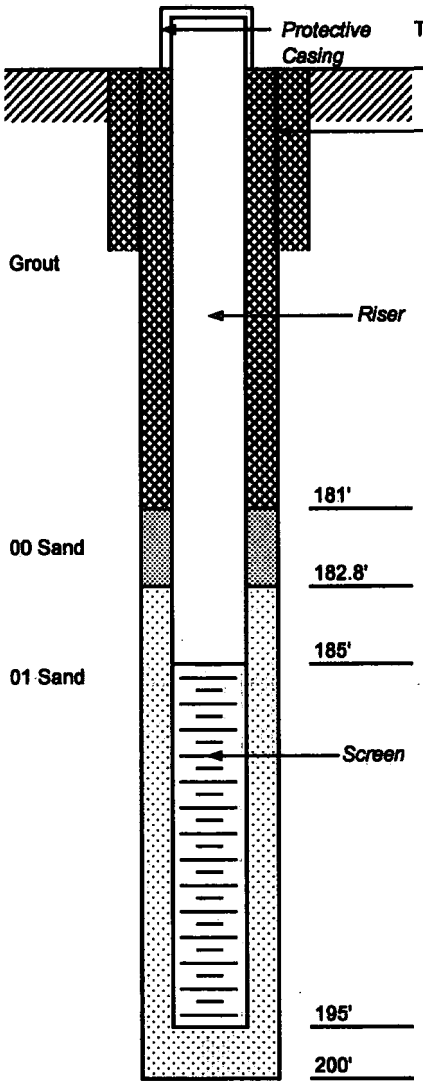
Method: Air Lift
Static Depth to Water: 18.41'
Pumping Depth To Water:
Pumping Rate: Spec. Capacity:
Volume Pumped: 160 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-124D
Permit No.: 2500068848



Type: Flush mounted

DRILLING SUMMARY

Outer casing

Drilling Company: B&B Drillers: Michael Finney
Drill Rig/Model: Air Rotary/I.R. T-4
Borehole Diameters: 12"/8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 200' bgs Depth To Water: 18.54'
Supervisor Geologist: S. Kellogg

WELL DESIGN

Outer Casing Material:	Steel	Diameter:	8"
Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	8/1/2007	8/1/2007
Installation:	8/10/2007	8/10/2007
Development:	9/6/2007	9/6/2007

WELL DEVELOPMENT

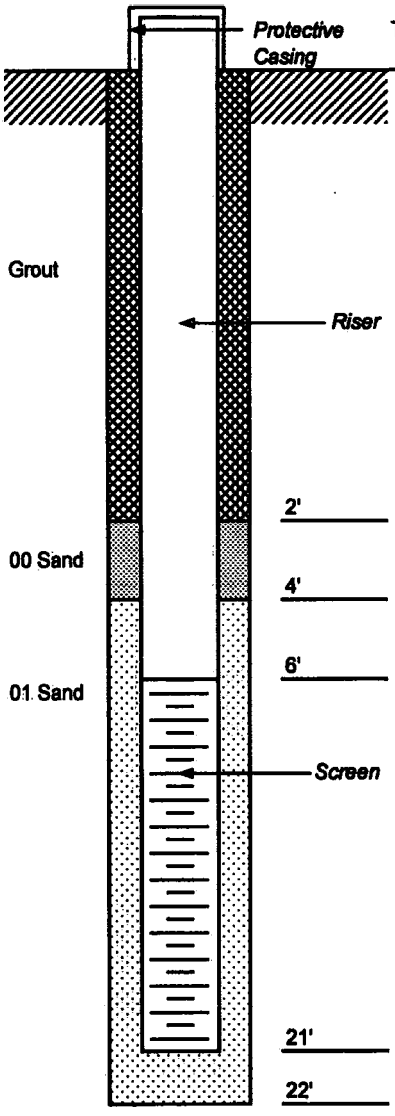
Method: Air Lift
Static Depth to Water: 18.54'
Pumping Depth To Water:
Pumping Rate: Spec. Capacity:
Volume Pumped: 275 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-125S
Permit No.: 2500068851



Type: Flush mount

DRILLING SUMMARY

Drilling Company:	B&B	Drillers:	Michael Finney
Drill Rig/Model:	HSA/MOBILE B-61		
Borehole Diameters:	8"	Drilling Fluid:	air/water
Bits/Depths:			
Total Depth:	22' bgs	Depth To Water:	12.11'
Supervisor Geologist:	M. Berger		

WELL DESIGN

Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/24/2007	7/24/2007
Installation:	7/24/2007	7/24/2007
Development:	8/30/2007	8/30/2007

WELL DEVELOPMENT

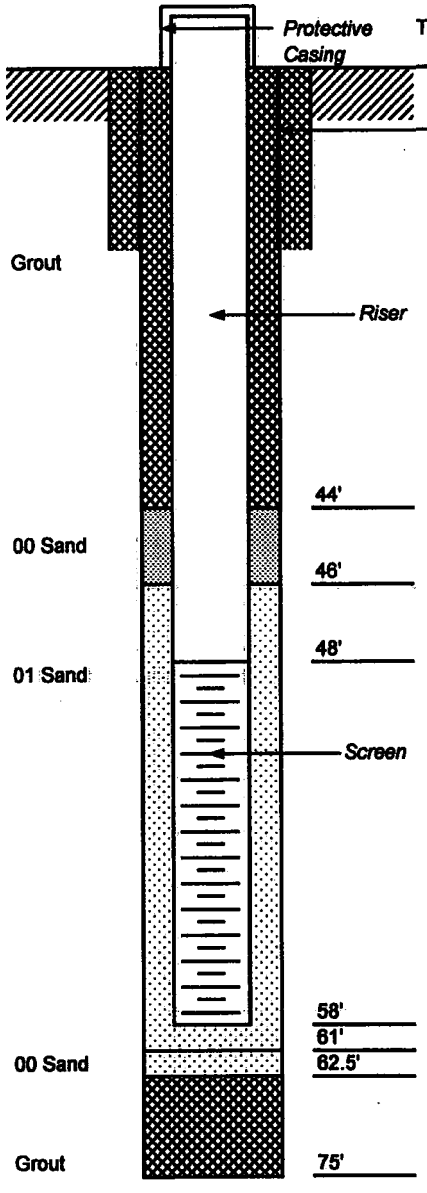
Method:	Air lift		
Static Depth to Water:	12.11'		
Pumping Depth To Water:			
Pumping Rate:		Spec. Capacity:	
Volume Pumped:	195 gal		

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-125I
Permit No.: 2500068852



Type: Flush mounted

DRILLING SUMMARY

Outer casing
Drilling Company: B&B Drillers: Michael Finney
Drill Rig/Model: Air Rotary/I.R. T-4
Borehole Diameters: 12"/8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 75' bgs Depth To Water: 12.62'
Supervisor Geologist: S. Kellogg

WELL DESIGN

Outer Casing Material:	Steel	Diameter:	8"
Casing Material:	Carbon Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	8/14/2007	8/15/2007
Installation:	8/24/2007	8/24/2007
Development:	8/31/2007	8/31/2007
	1/2/1900	

WELL DEVELOPMENT

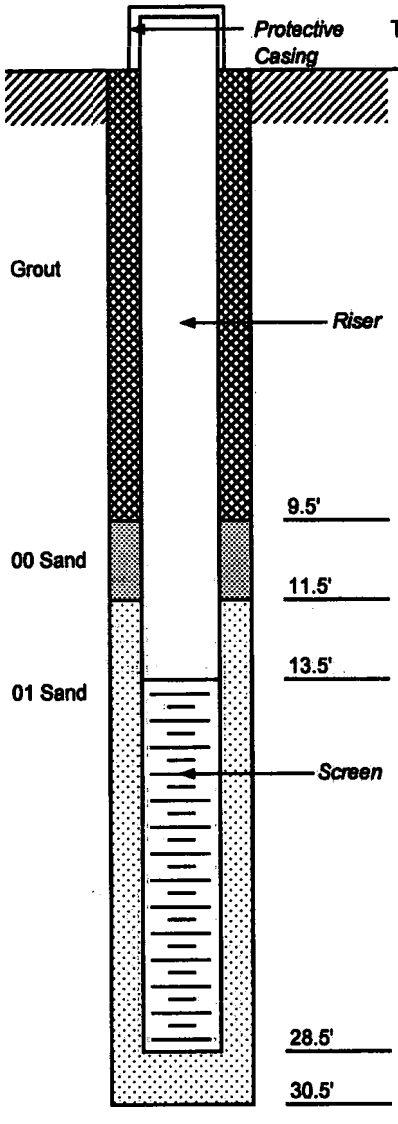
Method: Air Lift
Static Depth to Water: 12.62'
Pumping Depth To Water:
Pumping Rate: Spec. Capacity:
Volume Pumped: 95 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-126S
Permit No.: 2500068849



Type: Steel, flush mount

DRILLING SUMMARY

Drilling Company: B&B Drillers: Michael Finney
Drill Rig/Model: HSA/MOBILE B-61
Borehole Diameters: 8" Drilling Fluid: air/water
Bits/Depths:
Total Depth: 30.5' bgs Depth To Water: 10.24' TIC
Supervisor Geologist: M. Berger

WELL DESIGN

Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/19/2007	7/20/2007
Installation:	7/20/2007	7/20/2007
Development:	8/28/2007	

WELL DEVELOPMENT

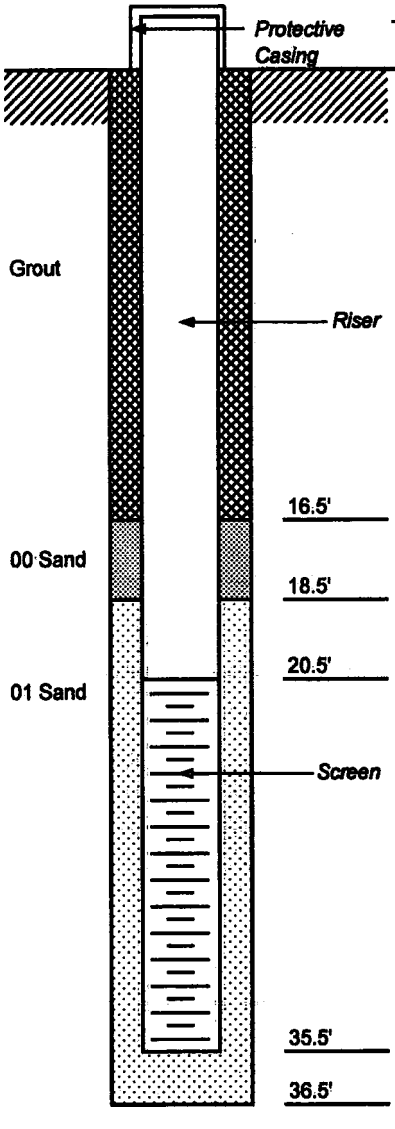
Method: Airlift
Static Depth to Water: 10.24' TIC
Pumping Depth To Water:
Pumping Rate: ~2 gpm Spec. Capacity:
Volume Pumped: 420 gal

CDM

environmental engineers, scientists,
planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: Federal Creosote Location: Manville, NJ Well No.: MW-127S
Permit No.: 2500068856



Type: Flush mount

DRILLING SUMMARY

Drilling Company: B&B Drillers: Michael Finney
Drill Rig/Model: HSA/MOBILE B-61
Borehole Diameters: 8" Drilling Fluid: Air/water
Bits/Depths:
Total Depth: 36.5' bgs Depth To Water: 25.46' TIC
Supervisor Geologist: M. Berger

WELL DESIGN

Casing Material:	Stainless Steel	Diameter:	4"
Screen Material:	Stainless Steel	Diameter:	4"
Slot Size:	0.01	Setting:	
Filter Material:	01 Sand	Setting:	
Seals Material:	00 Sand	Setting:	
Grout:		Setting:	
Surface Casing Material:	Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:	7/18/2007	7/18/2007
Installation:	7/18/2007	7/18/2007
Development:	8/28/2007	8/29/2007

WELL DEVELOPMENT

Method: Air Lift
Static Depth to Water: 25.46' TIC
Pumping Depth To Water:
Pumping Rate: ~0.75 gpm Spec. Capacity:
Volume Pumped: 150 gal

Response to Comments
Federal Creosote Superfund Site
Groundwater Monitoring Report - Year 3

Comment 1: Page 1-2, 1.2. Site geology and hydrogeology was well detailed in the text. However, it is recommended that at least one or two cross-sections be prepared and presented to depict the unconsolidated deposits and bedrock formations.

Response: Concur. CDM has prepared two cross-sections depicting the unconsolidated deposits and bedrock formations and one figure showing the locations of the two cross-sections. These three figures (Figures 1-3, 1-4, and 1-5) will be included in the Final Year 3 Groundwater Monitoring Report.

Comment 2: Page 2-3, 2.1.2. Please add the rationale for non-correlating geophysical logs for wells in close proximity to one another.

Response: Concur. CDM will revise the text to provide a rationale for non-correlating geophysical logs for wells in close proximity to one another.

Comment 3: Page 2-5, 2.1.2. The rationale for screened intervals, based on geophysical logging, is inconsistent with the actual screened interval selected for MW-123D, MW-123I, and MW-124I. Please clarify.

Response: Concur. CDM will revise the text to clarify the rationale used for selecting the screened intervals at MW-123D, MW-123I and MW-124I.

Comment 4: Figures 3-4, 3-5, and 3-6. Recommend the addition of isoconcentration contours of the most prominent or prevalent contaminants of concern either on these figures or as new figures. This would significantly improve visual representation of the plumes.

Response: Concur. CDM will revise Figures 3-4, 3-5 and 3-6 to add isoconcentration contours for naphthlene and benzene.

Comment 5: Appendix A - Well Construction Diagrams. The well construction diagrams are incomplete with respect to material suppliers/manufacturers, material qualities and mix ratios, measurements of well materials (well casing and screen, filter pack, grout, etc) and placement intervals

Additionally well development logs were not provided to document stabilization parameters during and after development completion, equipment used (pump and surge block), length of time of each development cycle and pumping rate was not consistently identified. Please provide.

Response: CDM does not generally include material suppliers/manufactures, material qualities and mix ratios on our boring logs and does not intend to include that information. Measurements and placement intervals are included as text beside the graphic, but the specific measurements will be transposed to the table to the right of the graphic.

Well development information, including parameter readings, pumping rates, length of development and development equipment will be provided in Appendix A.

Comment 6: Appendix D - Low-Flow Groundwater Sampling Sheets. Total volume purged prior to sampling has not been documented. Please provide.

Response: Concur. The total volume purged prior to sampling for 2007 sampling event will be provided in Table 3-5 in the final year 3 groundwater monitoring report. Total volume will be calculated and entered in the Low-flow Groundwater Sampling Sheets for future reports.